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EMERIS

NAC

OF THE FORTY-SIXTH CONGRESS

TON:
IPMENT.

THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC

FOR THE YEAR

1896

FIRST EDITION

PUBLISHED IN COMPLIANCE WITH A JOINT RESOLUTION OF THE FORTY-SIXTH CONGRESS

WASHINGTON:
BUREAU OF EQUIPMENT.
1893.

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1893
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JOINT RESOLUTION

FOR PRINTING THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be printed annually at the Government Printing Office fifteen hundred copies of the American Ephemeris and Nautical Almanac and of the papers supplementary thereto, of which one hundred shall be for the use of the Senate, four hundred for the House of Representatives, and one thousund for the public service, to be distributed by the Navy Department.

Sec. 2. That additional copies of the Ephemeris and of the Nautical Almanac extracted therefrom may be ordered by the Secretary of the Navy for sale: Provided, That all moneys received from such sale shall be deposited in the Treasury to the credit of the appropriation for public printing.

Approved, February 11, 1880.

PREFACE.

THE arrangement of *The American Ephemeris* adopted in the volume for the year 1882, and explained in the Appendix to that volume, has been continued without radical change to the present time.

The additions then made comprise more complete data for eclipses of the sun, diagrams showing the configurations of the satellites of Jupiter, data respecting the disks of Mercury and Venus for the reduction of meridian and photometric observations, and diagrams, with tables, for identifying any known satellites of other planets. The work is divided into three parts, as follows:—

Part I, *Ephemeris for the Meridian of Greenwich*, gives the geocentric and heliocentric positions of the major planets, the Ephemeris of the Sun, and other fundamental astronomical data for equi-distant intervals of Greenwich mean time.

Part II, *Ephemeris for the Meridian of Washington*, gives the ephemerides of the fixed stars, sun, moon, and major planets for transit over the meridian of Washington. The mean places of the fixed stars and the data for their reduction are also included in this part. The list of mean and apparent places of fixed stars has been greatly enlarged, for the convenience of field-astronomers.

Part III, *Phenomena*, contains predictions of phenomena to be observed, with data for their computation. Washington mean time is used in this part except in a few cases, notably that of eclipses, where Greenwich mean time was judged more convenient.

SIMON NEWCOMB,
Professor U. S. Navy, Superintendent.

WASHINGTON, *March*, 1893.

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CORRECTIONS.

Ephemeris for 1893.

Page.						
446,	Occultation of B. A. C. 3206, April 23.	Immersion,	*for*	$13^h\ 18^m$	*read*	$13^h\ 13^m$
		Emersion,	*for*	$13^h\ 18^m$	*read*	$14^h\ 18^m$
		Duration,	*for*	$1^h\ 0^m$	*read*	$1^h\ 5^m$
495,	Example 3,		*for*	21.0795	*read*	21.09532
			for	$21^h\ 4^m\ 46^s.14$	*read*	$21^h\ 5^m\ 43^s.16$

Ephemeris for 1894. (*First Edition only.*)

419,	Greatest Libration of Moon,	*for*	Jan. $25^d\ 6^h\ 38^m$	*read*	Jan. $25^d\ 17^h\ 20^m$
488,	Feb. 5, ☌ ☿ ☽,	*for*	☿ $-\ 2^\circ\ 5'$	*read*	☿ $+\ 2^\circ\ 5'$
488,	June 20, ♀ Gr. Hel. Lat.	*for*	$20^d\ 16^h\ 2^m$	*read*	$19^d\ 16^h\ 2^m$
489,	July 2, ⊕ in Aphelion,	*for*	$2^d\ 16^h\ 14^m$	*read*	$2^d\ 12^h\ 14^m$
489,	July 30, ☿ Stationary,	*for*	$30^d\ 15^h\ 30^m$	*read*	$30^d\ 10^h\ 30^m$
489,	Sept. 17, □ ♆ ☉,	*for*	$17^d\ 18^h\ 26^m$	*read*	$7^d\ 18^h\ 26^m$
489,	Nov. 11,	*for*	☌ ♀ ☉	*read*	☌ ♀ ♅
489,	Dec. 12,	*for*	♂ ♃ ☽	*read*	☌ ♃ ☽
509–511,	Omit all relating to Annular phase.				
522,	line 7,	*for*	$0''.31$	*read*	$0''.28$

Ephemeris for 1895. (*First Edition only.*)

280,	Independent Star Numbers,	*for*	$3^s.07261$	*read*	$3^s.07263$
414,	Solar Eclipse of Sept. 3.	Total eclipse begins	$3^d\ 16^h\ 6^m.4$	*read*	$3^d\ 17^h\ 6^m.4$
415,	Solar Eclipse of Sept. 18.	Eclipse begins in long.	$167^\circ\ 4'.8$ W.,	*read*	$164^\circ\ 20'.1$ E.
		Greatest Eclipse in long.	$169^\circ\ 13'.9$ E.	*read*	$140^\circ\ 38'.9$ E.
		Eclipse ends in long.	$47^\circ\ 42'.8$ W.	*read*	$76^\circ\ 17'.8$ W.
418,	Solar Eclipse of Sept. 18.	The values of μ should be increased by			$28^\circ\ 35'$
	In the chart of this eclipse the diagram should be $28^\circ\ 35'$ further to the west.				
489,	Insert October $25^d\ 18^h$, ♀ greatest brilliancy.				
489,	Nov. $8^d\ 14^h$	*for*	♂	*read*	☌
493,	Longitude of Tokio,	*for*	$-\ 16^h\ 14^m\ 19^s.85$	*read*	$-\ 14^h\ 27^m\ 10^s.0$
		for	$-\ 11^h\ 6^m\ 7^s.81$	*read*	$-\ 9^h\ 18^m\ 58^s.0$
493,	Longitude of West Point,	*for*	$-\ 4^h\ 55^m\ 50^s.55$	*read*	$+\ 4^h\ 55^m\ 50\ .55$
502,	line 3,	*for*	2966	*read*	2877
505,	line 48, Omit the words "and a transit of Mercury."				
516,	line 15,	*for*	$\pm\ 4^m.707$	*read*	$\pm\ 14^m.707$
521,	line 7,	*for*	$0''.31$	*read*	$0''.28$
521,	Sirius 1896.0 Δa	*for*	$+\ 0^s.083$	*read*	$+\ 0^s.092$

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1896, WHICH COMPRISES THE LATTER PART OF THE 120TH AND THE BEGINNING OF THE 121ST YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6609 of the Julian Period;
" 7404–7405 of the Byzantine era, the year 7404 commencing on September 1st;
" 5656–5657 of the Jewish era, the year 5657 commencing on September 8th, or, more exactly, at sunset on September 7th;
" 2649 since the foundation of Rome, according to Varro;
" 2643 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding, in the notation of chronologists, to the 747th; and, in the notation of astronomers, to the 746th year before the birth of Christ;
" 2672 of the Olympiads, or the fourth year of the 668th Olympiad commencing in July, 1896, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period;
" 2208 of the Grecian era, or the era of the Seleucidæ;
" 1612 of the era of Diocletian;
" 2556 of the Japanese era and to the 29th year of the period entitled "Meiji."

The year 1314 of the Mohammedan era, or the era of the Hegira, begins on the 12th day of June, 1896.

The first day of January of the year 1896 is the 2,413,560th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	E D	Solar Cycle	1
Epact	15	Roman Indiction	9
Lunar Cycle or Golden Number	16	Julian Period	6609

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

☉	The Sun.	♂	Mars.
☽	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring Signs.	1.	♈	Aries.	Autumn Signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpius.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer Signs.	4.	♋	Cancer.	Winter Signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌	Conjunction, or having the same Longitude or Right Ascension.
□	Quadrature, or differing 90° in Longitude or Right Ascension.
☍	Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

☊	Ascending Node.	$^{\circ}$	Degrees.
☋	Descending Node.	$'$	Minutes of Arc.
N.	North.	$''$	Seconds of Arc.
S.	South.	^{h}	Hours.
E.	East.	^{m}	Minutes of Time.
W.	West.	^{s}	Seconds of Time.

PART I

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF GREENWICH

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	18 46 15.62	11.040	S. 23 1 43.2	+12.17	16 18.42	71.07	3 39.58	1.180
Thur.	2	18 50 40.43	11.027	22 56 36.7	13.34	16 18.42	71.02	4 7.76	1.167
Frid.	3	18 55 4.91	11.012	22 51 2.8	14.48	16 18.41	70.97	4 35.61	1.153
Sat.	4	18 59 29.02	10.996	22 45 1.6	+15.61	16 18.40	70.92	5 3.08	1.137
SUN.	5	19 3 52.74	10.979	22 38 33.4	16.74	16 18.38	70.86	5 30.17	1.120
Mon.	6	19 8 16.04	10.961	22 31 38.2	17.86	16 18.35	70.80	5 56.84	1.102
Tues.	7	19 12 38.89	10.942	22 24 16.2	+18.97	16 18.32	70.74	6 23.05	1.083
Wed.	8	19 17 1.26	10.922	22 16 27.7	20.07	16 18.28	70.67	6 48.80	1.062
Thur.	9	19 21 23.14	10.901	22 8 12.9	21.16	16 18.24	70.60	7 14.05	1.041
Frid.	10	19 25 44.49	10.878	21 59 32.1	+22.24	16 18.19	70.52	7 38.78	1.019
Sat.	11	19 30 5.29	10.854	21 50 25.4	23.31	16 18.14	70.44	8 2.95	0.995
SUN.	12	19 34 25.51	10.830	21 40 53.1	24.37	16 18.09	70.36	8 26.54	0.971
Mon.	13	19 38 45.12	10.804	21 30 55.5	+25.42	16 18.03	70.28	8 49.54	0.945
Tues.	14	19 43 4.10	10.777	21 20 33.0	26.45	16 17.97	70.19	9 11.90	0.918
Wed.	15	19 47 22.44	10.749	21 9 45.7	27.48	16 17.90	70.10	9 33.62	0.890
Thur.	16	19 51 40.09	10.721	20 58 34.1	+28.49	16 17.83	70.01	9 54.65	0.862
Frid.	17	19 55 57.04	10.691	20 46 58.5	29.48	16 17.76	69.91	10 14.99	0.832
Sat.	18	20 0 13.28	10.661	20 34 59.2	30.45	16 17.68	69.81	10 34.61	0.802
SUN.	19	20 4 28.77	10.630	20 22 36.5	+31.42	16 17.60	69.71	10 53.49	0.771
Mon.	20	20 8 43.50	10.598	20 9 50.9	32.37	16 17.52	69.61	11 11.62	0.739
Tues.	21	20 12 57.47	10.565	19 56 42.6	33.31	16 17.43	69.51	11 28.99	0.707
Wed.	22	20 17 10.65	10.532	19 43 12.2	+34.23	16 17.34	69.40	11 45.56	0.674
Thur.	23	20 21 23.03	10.499	19 29 19.8	35.13	16 17.24	69.30	12 1.34	0.641
Frid.	24	20 25 34.60	10.465	19 15 5.9	36.01	16 17.13	69.19	12 16.32	0.607
Sat.	25	20 29 45.36	10.431	19 0 31.0	+36.89	16 17.02	69.08	12 30.48	0.573
SUN.	26	20 33 55.31	10.397	18 45 35.3	37.75	16 16.91	68.97	12 43.83	0.539
Mon.	27	20 38 4.43	10.363	18 30 19.2	38.59	16 16.79	68.86	12 56.36	0.505
Tues.	28	20 42 12.72	10.329	18 14 43.1	+39.41	16 16.67	68.75	13 8.07	0.471
Wed.	29	20 46 20.20	10.294	17 58 47.4	40.22	16 16.54	68.63	13 18.95	0.437
Thur.	30	20 50 26.85	10.260	17 42 32.4	41.01	16 16.40	68.52	13 29.02	0.402
Frid.	31	20 54 32.68	10.226	17 25 58.6	41.79	16 16.26	68.40	13 38.27	0.368
Sat.	32	20 58 37.70	10.192	S. 17 9 6.3	+42.56	16 16.11	68.29	13 46.70	0.334

Note.—The mean time of semidiameter passing may be found by subtracting $0^s.19$ from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	18 46 14.94	11.037	S. 23 1 44.0	+12.19	3 39.51	1.180	18 42 35.43
Thur.	2	18 50 39.67	11.024	22 56 37.7	13.33	4 7.68	1.167	18 46 31.99
Frid.	3	18 55 4.07	11.009	22 51 3.9	14.47	4 35.52	1.152	18 50 28.55
Sat.	4	18 59 28.10	10.993	22 45 3.0	+15.60	5 2.99	1.136	18 54 25.11
SUN.	5	19 3 51.73	10.976	22 38 34.9	16.73	5 30.06	1.119	18 58 21.67
Mon.	6	19 8 14.95	10.958	22 31 40.0	17.85	5 56.72	1.102	19 2 18.23
Tues.	7	19 12 37.72	10.939	22 24 18.3	+18.96	6 22.94	1.082	19 6 14.78
Wed.	8	19 17 0.02	10.919	22 16 30.0	20.06	6 48.68	1.062	19 10 11.34
Thur.	9	19 21 21.83	10.898	22 8 15.5	21.15	7 13.92	1.041	19 14 7.90
Frid.	10	19 25 43.11	10.876	21 59 34.9	+22.23	7 38.64	1.019	19 18 4.46
Sat.	11	19 30 3.83	10.852	21 50 28.5	23.30	8 2.81	0.995	19 22 1.02
SUN.	12	19 34 23.99	10.827	21 40 56.6	24.36	8 26.41	0.971	19 25 57.58
Mon.	13	19 38 43.54	10.801	21 30 59.3	+25.41	8 49.40	0.945	19 29 54.14
Tues.	14	19 43 2.45	10.774	21 20 37.1	26.44	9 11.76	0.918	19 33 50.69
Wed.	15	19 47 20.73	10.747	21 9 50.2	27.46	9 33.48	0.890	19 37 47.25
Thur.	16	19 51 38.32	10.719	20 58 38.9	+28.47	9 54.51	0.862	19 41 43.81
Frid.	17	19 55 55.22	10.689	20 47 3.6	29.46	10 14.85	0.832	19 45 40.37
Sat.	18	20 0 11.40	10.659	20 35 4.6	30.44	10 34.47	0.802	19 49 36.93
SUN.	19	20 4 26.84	10.628	20 22 42.3	+31.41	10 53.35	0.771	19 53 33.48
Mon.	20	20 8 41.53	10.596	20 9 57.0	32.36	11 11.49	0.740	19 57 30.04
Tues.	21	20 12 55.45	10.564	19 56 49.0	33.30	11 28.85	0.707	20 1 26.60
Wed.	22	20 17 8.58	10.531	19 43 18.9	+34.22	11 45.43	0.674	20 5 23.16
Thur.	23	20 21 20.92	10.497	19 29 26.9	35.12	12 1.21	0.641	20 9 19.71
Frid.	24	20 25 32.46	10.464	19 15 13.4	36.00	12 16.19	0.607	20 13 16.27
Sat.	25	20 29 43.19	10.430	19 0 38.7	+36.88	12 30.36	0.573	20 17 12.83
SUN.	26	20 33 53.10	10.396	18 45 43.3	37.73	12 43.71	0.539	20 21 9.39
Mon.	27	20 38 2.19	10.362	18 30 27.6	38.57	12 56.25	0.505	20 25 5.94
Tues.	28	20 42 10.46	10.327	18 14 51.8	+39.39	13 7.96	0.471	20 29 2.50
Wed.	29	20 46 17.91	10.293	17 58 56.4	40.21	13 18.86	0.437	20 32 59.06
Thur.	30	20 50 24.54	10.259	17 42 41.7	41.00	13 28.93	0.403	20 36 55.61
Frid.	31	20 54 30.36	10.225	17 26 8.2	41.78	13 38.19	0.369	20 40 52.17
Sat.	32	20 58 35.36	10.191	S. 17 9 16.1	+42.55	13 46.63	0.335	20 44 48.73

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour,
+9^s.8565.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE.						
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	1	280 38 7.5	38 0.3	152.85	+ 0.57	9.9926500	− 0.3	5 16 32.57
2	2	281 39 16.0	39 8.6	152.86	0.46	9.9926507	+ 0.9	5 12 36.65
3	3	282 40 24.6	40 17.0	152.86	0.34	9.9926542	2.0	5 8 40.74
4	4	283 41 33.3	41 25.5	152.86	+ 0.20	9.9926605	+ 3.1	5 4 44.83
5	5	284 42 42.1	42 34.1	152.87	+ 0.07	9.9926696	4.2	5 0 48.92
6	6	285 43 51.1	43 42.9	152.88	− 0.06	9.9926812	5.3	4 56 53.00
7	7	286 45 0.2	44 51.8	152.88	− 0.18	9.9926952	+ 6.3	4 52 57.09
8	8	287 46 9.4	46 0.8	152.89	0.28	9.9927114	7.2	4 49 1.18
9	9	288 47 18.7	47 10.0	152.89	0.36	9.9927299	8.1	4 45 5.27
10	10	289 48 28.0	48 19.1	152.88	− 0.42	9.9927504	+ 9.0	4 41 9.35
11	11	290 49 37.1	49 28.0	152.88	0.44	9.9927729	9.8	4 37 13.44
12	12	291 50 46.1	50 36.8	152.87	0.43	9.9927972	10.5	4 33 17.53
13	13	292 51 54.9	51 45.4	152.86	− 0.39	9.9928232	+11.2	4 29 21.62
14	14	293 53 3.4	52 53.8	152.84	0.32	9.9928509	11.9	4 25 25.70
15	15	294 54 11.4	54 1.6	152.82	0.24	9.9928802	12.5	4 21 29.79
16	16	295 55 19.0	55 9.0	152.80	− 0.12	9.9929109	+13.1	4 17 33.88
17	17	296 56 25.8	56 15.6	152.77	0.00	9.9929433	13.8	4 13 37.97
18	18	297 57 32.0	57 21.6	152.74	+ 0.13	9.9929774	14.6	4 9 42.06
19	19	298 58 37.4	58 26.8	152.70	+ 0.26	9.9930132	+15.3	4 5 46.14
20	20	299 59 41.9	59 31.1	152.67	0.38	9.9930508	16.0	4 1 50.23
21	21	301 0 45.4	0 34.5	152.63	0.48	9.9930902	16.8	3 57 54.32
22	22	302 1 47.9	1 36.8	152.58	+ 0.56	9.9931315	+17.7	3 53 58.41
23	23	303 2 49.3	2 38.0	152.54	0.62	9.9931750	18.6	3 50 2.50
24	24	304 3 49.6	3 38.2	152.49	0.66	9.9932206	19.5	3 46 6.58
25	25	305 4 48.8	4 37.2	152.44	+ 0.66	9.9932687	+20.5	3 42 10.67
26	26	306 5 46.9	5 35.1	152.40	0.64	9.9933191	21.5	3 38 14.76
27	27	307 6 43.9	6 31.9	152.35	0.59	9.9933719	22.5	3 34 18.85
28	28	308 7 39.9	7 27.7	152.31	+ 0.50	9.9934272	+23.6	3 30 22.94
29	29	309 8 34.7	8 22.4	152.27	0.40	9.9934853	24.6	3 26 27.03
30	30	310 9 28.5	9 16.1	152.22	0.28	9.9935458	25.7	3 22 31.12
31	31	311 10 21.3	10 8.7	152.18	0.15	9.9936089	26.8	3 18 35.21
32	32	312 11 13.2	11 0.5	152.14	+ 0.01	9.9936745	+27.9	3 14 39.30

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^d.0$.

Diff. for 1 Hour,
—$9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 8.4	16 12.0	59 7.6	+1.21	59 20.9	+1.00	13 13.9	2.45	16.2
2	16 14.9	16 17.0	59 31.5	0.76	59 39.2	0.53	14 10.8	2.30	17.2
3	16 18.4	16 19.0	59 44.2	+0.30	59 46.4	+0.08	15 4.2	2.15	18.2
4	16 18.9	16 18.1	59 46.0	−0.13	59 43.2	−0.32	15 54.5	2.05	19.2
5	16 16.8	16 15.0	59 38.3	0.48	59 31.6	0.63	16 42.9	2.00	20.2
6	16 12.7	16 10.1	59 23.2	0.75	59 13.6	0.85	17 30.8	2.00	21.2
7	16 7.1	16 4.0	59 2.9	−0.93	58 51.4	−0.99	18 19.6	2.07	22.2
8	16 0.7	15 57.3	58 39.2	1.03	58 26.6	1.07	19 10.4	2.17	23.2
9	15 53.7	15 50.1	58 13.6	1.10	58 0.3	1.12	20 3.9	2.29	24.2
10	15 46.4	15 42.6	57 46.7	−1.14	57 32.9	−1.16	21 0.1	2.38	25.2
11	15 38.8	15 35.0	57 18.9	1.18	57 4.7	1.19	21 57.7	2.41	26.2
12	15 31.1	15 27.1	56 50.4	1.20	56 35.9	1.21	22 55.0	2.35	27.2
13	15 23.2	15 19.2	56 21.4	−1.21	56 6.9	−1.21	23 49.8	2.22	28.2
14	15 15.3	15 11.4	55 52.4	1.20	55 38.2	1.17	6		29.2
15	15 7.6	15 4.0	55 24.4	1.13	55 11.1	1.08	0 41.0	2.05	0.6
16	15 0.6	14 57.4	54 58.5	−1.01	54 46.8	−0.93	1 28.3	1.89	1.6
17	14 54.6	14 52.0	54 36.3	0.83	54 27.0	0.71	2 11.9	1.76	2.6
18	14 49.9	14 48.3	54 19.3	0.57	54 13.3	0.42	2 52.9	1.66	3.6
19	14 47.2	14 46.7	54 9.3	−0.25	54 7.3	−0.07	3 32.2	1.62	4.6
20	14 46.7	14 47.4	54 7.6	+0.12	54 10.2	+0.32	4 11.0	1.62	5.6
21	14 48.8	14 50.9	54 15.3	0.53	54 23.0	0.75	4 50.4	1.67	6.6
22	14 53.7	14 57.2	54 33.3	+0.96	54 46.1	+1.18	5 31.6	1.77	7.6
23	15 1.4	15 6.3	55 1.5	1.38	55 19.3	1.58	6 15.8	1.92	8.6
24	15 11.7	15 17.8	55 39.4	1.76	56 1.6	1.93	7 4.0	2.10	9.6
25	15 24.3	15 31.2	56 25.6	+2.06	56 51.0	+2.16	7 56.9	2.30	10.6
26	15 38.4	15 45.8	57 17.5	2.24	57 44.7	2.26	8 54.2	2.47	11.6
27	15 53.2	16 0.5	58 11.8	2.24	58 38.4	2.17	9 54.6	2.55	12.6
28	16 7.4	16 13.8	59 3.8	+2.04	59 27.4	+1.87	10 55.7	2.53	13.6
29	16 19.6	16 24.5	59 48.6	1.64	60 6.8	1.37	11 55.1	2.42	14.6
30	16 28.5	16 31.5	60 21.5	1.07	60 32.4	0.74	12 51.6	2.28	15.6
31	16 33.4	16 34.1	60 39.2	+0.40	60 41.9	+0.05	13 44.9	2.16	16.6
32	16 33.7	16 32.3	60 40.5	−0.28	60 35.2	−0.59	14 35.9	2.09	17.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 24 58.12	2.5709	N.25 43 15.0	7.293	0	9 22 46.21	2.3217	N.16 56 53.7	14.032
1	7 27 32.27	2.5673	25 35 52.2	7.467	1	9 25 5.35	2.3162	16 42 48.8	14.131
2	7 30 6.20	2.5636	25 28 18.9	7.641	2	9 27 24.15	2.3106	16 28 38.0	14.228
3	7 32 39.90	2.5597	25 20 35.3	7.812	3	9 29 42.62	2.3052	16 14 21.5	14.323
4	7 35 13.36	2.5558	25 12 41.4	7.983	4	9 32 0.77	2.2997	15 59 59.3	14.417
5	7 37 46.58	2.5517	25 4 37.3	8.152	5	9 34 18.59	2.2943	15 45 31.5	14.508
6	7 40 19.56	2.5476	24 56 23.1	8.321	6	9 36 36.09	2.2890	15 30 58.3	14.598
7	7 42 52.29	2.5433	24 47 58.8	8.488	7	9 38 53.27	2.2837	15 16 19.7	14.687
8	7 45 24.75	2.5388	24 39 24.5	8.653	8	9 41 10.13	2.2783	15 1 35.9	14.773
9	7 47 56.94	2.5343	24 30 40.4	8.818	9	9 43 26.67	2.2731	14 46 47.0	14.857
10	7 50 28.86	2.5298	24 21 46.4	8.982	10	9 45 42.90	2.2679	14 31 53.1	14.940
11	7 53 0.51	2.5252	24 12 42.6	9.143	11	9 47 58.82	2.2628	14 16 54.2	15.022
12	7 55 31.88	2.5204	24 3 29.2	9.303	12	9 50 14.44	2.2578	14 1 50.5	15.101
13	7 58 2.96	2.5155	23 54 6.2	9.463	13	9 52 29.75	2.2528	13 46 42.1	15.178
14	8 0 33.74	2.5106	23 44 33.6	9.622	14	9 54 44.77	2.2478	13 31 29.2	15.253
15	8 3 4.23	2.5057	23 34 51.6	9.778	15	9 56 59.49	2.2428	13 16 11.8	15.327
16	8 5 34.42	2.5006	23 25 0.2	9.933	16	9 59 13.91	2.2380	13 0 50.0	15.398
17	8 8 4.30	2.4954	23 14 59.6	10.087	17	10 1 28.05	2.2333	12 45 24.0	15.468
18	8 10 33.87	2.4902	23 4 49.8	10.239	18	10 3 41.91	2.2287	12 29 53.8	15.537
19	8 13 3.13	2.4850	22 54 30.9	10.390	19	10 5 55.49	2.2240	12 14 19.5	15.604
20	8 15 32.07	2.4798	22 44 3.0	10.538	20	10 8 8.79	2.2193	11 58 41.3	15.668
21	8 18 0.70	2.4744	22 33 26.3	10.685	21	10 10 21.81	2.2147	11 42 59.3	15.731
22	8 20 29.00	2.4689	22 22 40.8	10.832	22	10 12 34.56	2.2103	11 27 13.6	15.792
23	8 22 56.97	2.4635	N.22 11 46.5	10.977	23	10 14 47.05	2.2060	N.11 11 24.2	15.852
THURSDAY 2.					SATURDAY 4.				
0	8 25 24.62	2.4581	N.22 0 43.6	11.119	0	10 16 59.28	2.2017	N.10 55 31.3	15.910
1	8 27 51.94	2.4525	21 49 32.2	11.261	1	10 19 11.25	2.1974	10 39 35.0	15.966
2	8 30 18.92	2.4469	21 38 12.3	11.400	2	10 21 22.97	2.1933	10 23 35.4	16.021
3	8 32 45.57	2.4413	21 26 44.2	11.537	3	10 23 34.45	2.1892	10 7 32.5	16.074
4	8 35 11.88	2.4358	21 15 7.9	11.673	4	10 25 45.68	2.1852	9 51 26.5	16.124
5	8 37 37.86	2.4302	21 3 23.4	11.808	5	10 27 56.67	2.1812	9 35 17.6	16.172
6	8 40 3.50	2.4244	20 51 30.9	11.941	6	10 30 7.42	2.1773	9 19 5.8	16.220
7	8 42 28.79	2.4187	20 39 30.5	12.072	7	10 32 17.95	2.1736	9 2 51.2	16.266
8	8 44 53.74	2.4130	20 27 22.3	12.202	8	10 34 28.25	2.1699	8 46 33.9	16.310
9	8 47 18.35	2.4072	20 15 6.3	12.329	9	10 36 38.33	2.1662	8 30 14.0	16.352
10	8 49 42.61	2.4015	20 2 42.8	12.454	10	10 38 48.19	2.1627	8 13 51.6	16.392
11	8 52 6.53	2.3958	19 50 11.8	12.579	11	10 40 57.85	2.1592	7 57 26.9	16.431
12	8 54 30.11	2.3901	19 37 33.3	12.702	12	10 43 7.30	2.1558	7 40 59.9	16.468
13	8 56 53.34	2.3843	19 24 47.5	12.822	13	10 45 16.55	2.1526	7 24 30.7	16.504
14	8 59 16.23	2.3786	19 11 54.6	12.941	14	10 47 25.61	2.1494	7 7 59.4	16.537
15	9 1 38.77	2.3728	18 58 54.6	13.058	15	10 49 34.47	2.1462	6 51 26.2	16.569
16	9 4 0.96	2.3670	18 45 47.6	13.173	16	10 51 43.15	2.1432	6 34 51.1	16.600
17	9 6 22.81	2.3613	18 32 33.8	13.287	17	10 53 51.65	2.1402	6 18 14.2	16.630
18	9 8 44.32	2.3556	18 19 13.2	13.399	18	10 55 59.98	2.1374	6 1 35.5	16.658
19	9 11 5.49	2.3499	18 5 45.9	13.509	19	10 58 8.14	2.1346	5 44 55.3	16.683
20	9 13 26.31	2.3442	17 52 12.1	13.617	20	11 0 16.13	2.1318	5 28 13.6	16.707
21	9 15 46.79	2.3385	17 38 31.9	13.723	21	11 2 23.96	2.1292	5 11 30.5	16.729
22	9 18 6.93	2.3329	17 24 45.4	13.828	22	11 4 31.64	2.1267	4 54 46.1	16.750
23	9 20 26.74	2.3273	17 10 52.6	13.931	23	11 6 39.17	2.1242	4 38 0.5	16.768
24	9 22 46.21	2.3217	N.16 56 53.7	14.032	24	11 8 46.55	2.1219	N. 4 21 13.9	16.785

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 5.					TUESDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	11 8 46.55	2.1219	N. 4 21 13.9	16.785	0	12 49 38.63	2.1152	S. 8 55 54.6	15.868
1	11 10 53.80	2.1196	4 4 26.3	16.802	1	12 51 45.60	2.1172	9 11 45.1	15.814
2	11 13 0.92	2.1175	3 47 37.7	16.817	2	12 53 52.70	2.1193	9 27 32.3	15.759
3	11 15 7.90	2.1154	3 30 48.3	16.829	3	12 55 59.92	2.1214	9 43 16.2	15.702
4	11 17 14.76	2.1134	3 13 58.2	16.841	4	12 58 7.27	2.1237	9 58 56.6	15.644
5	11 19 21.51	2.1116	2 57 7.4	16.851	5	13 0 14.76	2.1259	10 14 33.5	15.585
6	11 21 28.15	2.1098	2 40 16.1	16.858	6	13 2 22.38	2.1282	10 30 6.8	15.524
7	11 23 34.68	2.1080	2 23 24.4	16.865	7	13 4 30.15	2.1307	10 45 36.4	15.462
8	11 25 41.11	2.1064	2 6 32.3	16.870	8	13 6 38.07	2.1333	11 1 2.2	15.398
9	11 27 47.45	2.1049	1 49 40.0	16.873	9	13 8 46.15	2.1360	11 16 24.2	15.334
10	11 29 53.70	2.1035	1 32 47.5	16.876	10	13 10 54.39	2.1387	11 31 42.3	15.267
11	11 31 59.87	2.1021	1 15 54.9	16.876	11	13 13 2.79	2.1414	11 46 56.3	15.199
12	11 34 5.95	2.1008	0 59 2.4	16.874	12	13 15 11.35	2.1442	12 2 6.2	15.131
13	11 36 11.96	2.0997	0 42 10.0	16.872	13	13 17 20.09	2.1471	12 17 12.0	15.061
14	11 38 17.91	2.0986	0 25 17.8	16.868	14	13 19 29.00	2.1500	12 32 13.5	14.988
15	11 40 23.79	2.0975	N. 0 8 25.8	16.863	15	13 21 38.09	2.1530	12 47 10.6	14.915
16	11 42 29.61	2.0967	S. 0 8 25.8	16.856	16	13 23 47.36	2.1561	13 2 3.3	14.841
17	11 44 35.39	2.0959	0 25 16.9	16.847	17	13 25 56.82	2.1592	13 16 51.5	14.766
18	11 46 41.12	2.0952	0 42 7.5	16.837	18	13 28 6.47	2.1625	13 31 35.2	14.689
19	11 48 46.81	2.0946	0 58 57.4	16.826	19	13 30 16.32	2.1658	13 46 14.2	14.610
20	11 50 52.47	2.0940	1 15 46.6	16.813	20	13 32 26.37	2.1691	14 0 48.4	14.530
21	11 52 58.09	2.0935	1 32 34.9	16.798	21	13 34 36.61	2.1724	14 15 17.8	14.449
22	11 55 3.69	2.0932	1 49 22.3	16.783	22	13 36 47.06	2.1759	14 29 42.3	14.367
23	11 57 9.27	2.0929	S. 2 6 8.8	16.766	23	13 38 57.72	2.1795	S. 14 44 1.8	14.283
	MONDAY 6.					WEDNESDAY 8.			
0	11 59 14.84	2.0927	S. 2 22 54.2	16.747	0	13 41 8.60	2.1831	S. 14 58 16.2	14.198
1	12 1 20.40	2.0927	2 39 38.4	16.726	1	13 43 19.69	2.1867	15 12 25.5	14.112
2	12 3 25.96	2.0927	2 56 21.3	16.704	2	13 45 31 00	2.1904	15 26 29.6	14.023
3	12 5 31.53	2.0929	3 13 2.9	16.682	3	13 47 42.54	2.1942	15 40 28.3	13.933
4	12 7 37.11	2.0931	3 29 43.1	16.657	4	13 49 54.30	2.1979	15 54 21.6	13.843
5	12 9 42.70	2.0933	3 46 21.8	16.631	5	13 52 6.29	2.2018	16 8 9.5	13.752
6	12 11 48.30	2.0936	4 2 58.8	16.603	6	13 54 18.51	2.2057	16 21 51.9	13.659
7	12 13 53.93	2.0941	4 19 34.1	16.574	7	13 56 30.97	2.2096	16 35 28.6	13.564
8	12 15 59.60	2.0947	4 36 7.7	16.545	8	13 58 43.66	2.2135	16 48 59.6	13.468
9	12 18 5.30	2.0953	4 52 39.5	16.513	9	14 0 56.59	2.2176	17 2 24.8	13.372
10	12 20 11.04	2.0961	5 9 9.3	16.479	10	14 3 9.77	2.2217	17 15 44.2	13.273
11	12 22 16.83	2.0969	5 25 37.0	16.444	11	14 5 23.19	2.2258	17 28 57.6	13.172
12	12 24 22.67	2.0978	5 42 2.6	16.408	12	14 7 36.86	2.2299	17 42 4.9	13.071
13	12 26 28.57	2.0988	5 58 26.0	16.371	13	14 9 50.78	2.2341	17 55 6.1	12.969
14	12 28 34.53	2.0998	6 14 47.1	16.332	14	14 12 4.95	2.2382	18 8 1.2	12.866
15	12 30 40.55	2.1009	6 31 5.9	16.292	15	14 14 19.37	2.2425	18 20 50.0	12.761
16	12 32 46.64	2.1022	6 47 22.2	16.251	16	14 16 34.05	2.2468	18 33 32.5	12.655
17	12 34 52.82	2.1037	7 3 36.0	16.208	17	14 18 48.99	2.2511	18 46 8.6	12.547
18	12 36 59.08	2.1051	7 19 47.2	16.164	18	14 21 4.18	2.2553	18 58 38.1	12.437
19	12 39 5.43	2.1066	7 35 55.7	16.118	19	14 23 19.63	2.2597	19 11 1.0	12.327
20	12 41 11.87	2.1081	7 52 1.4	16.071	20	14 25 35.35	2.2641	19 23 17.3	12.217
21	12 43 18.40	2.1098	8 8 4.2	16.022	21	14 27 51.33	2.2685	19 35 27.0	12.104
22	12 45 25.04	2.1115	8 24 4.1	15.972	22	14 30 7.57	2.2729	19 47 29.8	11.989
23	12 47 31.78	2.1133	8 40 0.9	15.921	23	14 32 24.08	2.2773	19 59 25.7	11.873
24	12 49 38.63	2.1152	S. 8 55 54.6	15.868	24	14 34 40.85	2.2817	S. 20 11 14.6	11.757

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 9.					SATURDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 34 40.85	2.2817	S.20 11 14.6	11.757	0	16 28 59.23	2.4620	S.26 59 30.5	4.875
1	14 36 57.88	2.2862	20 22 56.5	11.639	1	16 31 27.01	2.4640	27 4 18.1	4.712
2	14 39 15.19	2.2907	20 34 31.3	11.521	2	16 33 54.91	2.4660	27 8 55.9	4.548
3	14 41 32.77	2.2952	20 45 59.0	11.401	3	16 36 22.93	2.4678	27 13 23.8	4.383
4	14 43 50.62	2.2997	20 57 19.4	11.279	4	16 38 51.05	2.4695	27 17 41.8	4.217
5	14 46 8.73	2.3041	21 8 32.4	11.156	5	16 41 19.27	2.4711	27 21 49.8	4.051
6	14 48 27.11	2.3086	21 19 38.1	11.032	6	16 43 47.58	2.4725	27 25 47.9	3.886
7	14 50 45.76	2.3130	21 30 36.3	10.907	7	16 46 15.97	2.4738	27 29 36.1	3.719
8	14 53 4.67	2.3174	21 41 26.9	10.780	8	16 48 44.44	2.4751	27 33 14.2	3.552
9	14 55 23.85	2.3219	21 52 9.9	10.652	9	16 51 12.98	2.4762	27 36 42.3	3.385
10	14 57 43.30	2.3264	22 2 45.2	10.524	10	16 53 41.58	2.4772	27 40 0.4	3.217
11	15 0 3.02	2.3308	22 13 12.8	10.394	11	16 56 10.24	2.4781	27 43 8.4	3.050
12	15 2 23.00	2.3353	22 23 32.5	10.262	12	16 58 38.95	2.4788	27 46 6.4	2.882
13	15 4 43.25	2.3397	22 33 44.3	10.130	13	17 1 7.70	2.4794	27 48 54.3	2.714
14	15 7 3.76	2.3440	22 43 48.1	9.997	14	17 3 36.48	2.4799	27 51 32.1	2.547
15	15 9 24.53	2.3483	22 53 43.9	9.862	15	17 6 5.28	2.4802	27 53 59.9	2.379
16	15 11 45.56	2.3527	23 3 31.6	9.727	16	17 8 34.10	2.4804	27 56 17.6	2.211
17	15 14 6.85	2.3570	23 13 11.1	9.590	17	17 11 2.93	2.4805	27 58 25.2	2.042
18	15 16 28.40	2.3612	23 22 42.4	9.452	18	17 13 31.76	2.4805	28 0 22.6	1.873
19	15 18 50.20	2.3655	23 32 5.4	9.312	19	17 16 0.59	2.4803	28 2 9.9	1.704
20	15 21 12.26	2.3697	23 41 19.9	9.172	20	17 18 29.40	2.4800	28 3 47.1	1.537
21	15 23 34.57	2.3739	23 50 26.0	9.031	21	17 20 58.19	2.4796	28 5 14.3	1.369
22	15 25 57.13	2.3780	23 59 23.6	8.889	22	17 23 26.95	2.4790	28 6 31.4	1.201
23	15 28 19.93	2.3821	S.24 8 12.7	8.746	23	17 25 55.67	2.4782	S.28 7 38.4	1.032
	FRIDAY 10.					SUNDAY 12.			
0	15 30 42.98	2.3862	S.24 16 53.1	8.601	0	17 28 24.34	2.4774	S.28 8 35.2	0.864
1	15 33 6.27	2.3902	24 25 24.8	8.456	1	17 30 52.96	2.4765	28 9 22.0	0.696
2	15 35 29.79	2.3940	24 33 47.8	8.309	2	17 33 21.52	2.4754	28 9 58.7	0.528
3	15 37 53.55	2.3979	24 42 1.9	8.161	3	17 35 50.01	2.4742	28 10 25.4	0.361
4	15 40 17.54	2.4017	24 50 7.1	8.013	4	17 38 18.42	2.4728	28 10 42.0	0.193
5	15 42 41.75	2.4054	24 58 3.5	7.865	5	17 40 46.75	2.4713	28 10 48.6	− 0.027
6	15 45 6.19	2.4091	25 5 50.9	7.715	6	17 43 14.98	2.4697	28 10 45.2	+ 0.140
7	15 47 30.85	2.4127	25 13 29.3	7.563	7	17 45 43.11	2.4679	28 10 31.8	0.306
8	15 49 55.72	2.4163	25 20 58.5	7.411	8	17 48 11.13	2.4661	28 10 8.5	0.472
9	15 52 20.81	2.4199	25 28 18.6	7.258	9	17 50 39.04	2.4641	28 9 35.2	0.637
10	15 54 46.11	2.4233	25 35 29.5	7.104	10	17 53 6.82	2.4619	28 8 52.0	0.802
11	15 57 11.61	2.4266	25 42 31.1	6.950	11	17 55 34.47	2.4597	28 7 59.0	0.966
12	15 59 37.30	2.4298	25 49 23.5	6.795	12	17 58 1.98	2.4573	28 6 56.1	1.130
13	16 2 3.19	2.4331	25 56 6.5	6.638	13	18 0 29.34	2.4548	28 5 43.4	1.294
14	16 4 29.27	2.4362	26 2 40.1	6.481	14	18 2 56.55	2.4521	28 4 20.9	1.458
15	16 6 55.53	2.4392	26 9 4.3	6.324	15	18 5 23.59	2.4492	28 2 48.5	1.621
16	16 9 21.97	2.4421	26 15 19.0	6.166	16	18 7 50.46	2.4463	28 1 6.4	1.782
17	16 11 48.58	2.4449	26 21 24.2	6.007	17	18 10 17.15	2.4433	27 59 14.7	1.943
18	16 14 15.36	2.4477	26 27 19.8	5.847	18	18 12 43.66	2.4402	27 57 13.3	2.103
19	16 16 42.30	2.4503	26 33 5.8	5.687	19	18 15 9.98	2.4369	27 55 2.3	2.263
20	16 19 9.40	2.4529	26 38 42.2	5.526	20	18 17 36.09	2.4335	27 52 41.7	2.422
21	16 21 36.65	2.4553	26 44 8.9	5.364	21	18 20 2.00	2.4301	27 50 11.6	2.581
22	16 24 4.04	2.4577	26 49 25.9	5.202	22	18 22 27.70	2.4265	27 47 32.0	2.739
23	16 26 31.57	2.4599	26 54 33.1	5.038	23	18 24 53.18	2.4227	27 44 43.0	2.896
24	16 28 59.23	2.4620	S.26 59 30.5	4.875	24	18 27 18.43	2.4189	S.27 41 44.5	3.053

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 27 18.43	2.4189	S.27 41 44.5	3.053	0	20 17 28.10	2.1512	S.22 34 19.8	9.310
1	18 29 43.45	2.4150	27 38 36.7	3.208	1	20 19 36.98	2.1448	22 24 58.2	9.410
2	18 32 8.23	2.4110	27 35 19.6	3.363	2	20 21 45.48	2.1385	22 15 30.6	9.510
3	18 34 32.77	2.4068	27 31 53.2	3.517	3	20 23 53.60	2.1321	22 5 57.0	9.608
4	18 36 57.05	2.4026	27 28 17.6	3.669	4	20 26 1.33	2.1258	21 56 17.6	9.705
5	18 39 21.08	2.3983	27 24 32.9	3.821	5	20 28 8.69	2.1195	21 46 32.4	9.800
6	18 41 44.85	2.3939	27 20 39.1	3.972	6	20 30 15.67	2.1132	21 36 41.6	9.894
7	18 44 8.35	2.3893	27 16 36.2	4.122	7	20 32 22.27	2.1068	21 26 45.2	9.987
8	18 46 31.57	2.3847	27 12 24.4	4.271	8	20 34 28.49	2.1006	21 16 43.2	10.079
9	18 48 54.51	2.3800	27 8 3.7	4.419	9	20 36 34.34	2.0943	21 6 35.7	10.169
10	18 51 17.17	2.3752	27 3 34.1	4.567	10	20 38 39.81	2.0881	20 56 22.9	10.258
11	18 53 39.54	2.3703	26 58 55.6	4.714	11	20 40 44.91	2.0819	20 46 4.8	10.346
12	18 56 1.61	2.3653	26 54 8.4	4.859	12	20 42 49.64	2.0757	20 35 41.4	10.433
13	18 58 23.38	2.3603	26 49 12.5	5.003	13	20 44 54.00	2.0696	20 25 12.9	10.518
14	19 0 44.84	2.3552	26 44 8.0	5.147	14	20 46 57.99	2.0634	20 14 39.3	10.602
15	19 3 6.00	2.3500	26 38 54.9	5.289	15	20 49 1.61	2.0573	20 4 0.7	10.684
16	19 5 26.84	2.3447	26 33 33.3	5.430	16	20 51 4.87	2.0512	19 53 17.2	10.766
17	19 7 47.36	2.3393	26 28 3.3	5.569	17	20 53 7.76	2.0452	19 42 28.8	10.847
18	19 10 7.55	2.3338	26 22 25.0	5.708	18	20 55 10.29	2.0392	19 31 35.6	10.926
19	19 12 27.42	2.3283	26 16 38.4	5.846	19	20 57 12.46	2.0332	19 20 37.7	11.003
20	19 14 46.95	2.3228	26 10 43.5	5.983	20	20 59 14.28	2.0273	19 9 35.2	11.080
21	19 17 6.15	2.3172	26 4 40.4	6.119	21	21 1 15.74	2.0213	18 58 28.1	11.156
22	19 19 25.01	2.3115	25 58 29.2	6.252	22	21 3 16.84	2.0155	18 47 16.5	11.231
23	19 21 43.53	2.3057	S.25 52 10.1	6.384	23	21 5 17.60	2.0097	S.18 36 0.4	11.304
TUESDAY 14.					THURSDAY 16.				
0	19 24 1.70	2.2999	S.25 45 43.1	6.516	0	21 7 18.01	2.0039	S.18 24 40.0	11.376
1	19 26 19.52	2.2941	25 39 8.2	6.647	1	21 9 18.07	1.9982	18 13 15.3	11.447
2	19 28 36.99	2.2882	25 32 25.4	6.777	2	21 11 17.79	1.9925	18 1 46.4	11.516
3	19 30 54.11	2.2823	25 25 34.9	6.905	3	21 13 17.17	1.9868	17 50 13.4	11.584
4	19 33 10.87	2.2763	25 18 36.8	7.033	4	21 15 16.21	1.9812	17 38 36.3	11.652
5	19 35 27.27	2.2703	25 11 31.0	7.159	5	21 17 14.92	1.9757	17 26 55.1	11.719
6	19 37 43.31	2.2643	25 4 17.7	7.283	6	21 19 13.30	1.9702	17 15 10.0	11.783
7	19 39 58.98	2.2582	24 56 57.0	7.407	7	21 21 11.35	1.9647	17 3 21.1	11.847
8	19 42 14.29	2.2521	24 49 28.9	7.529	8	21 23 9.07	1.9592	16 51 28.3	11.911
9	19 44 29.23	2.2459	24 41 53.5	7.650	9	21 25 6.46	1.9539	16 39 31.8	11.972
10	19 46 43.80	2.2397	24 34 10.9	7.769	10	21 27 3.54	1.9486	16 27 31.6	12.033
11	19 48 57.99	2.2334	24 26 21.2	7.887	11	21 29 0.30	1.9433	16 15 27.8	12.092
12	19 51 11.81	2.2272	24 18 24.4	8.005	12	21 30 56.74	1.9381	16 3 20.5	12.151
13	19 53 25.25	2.2209	24 10 20.6	8.121	13	21 32 52.87	1.9330	15 51 9.7	12.208
14	19 55 38.32	2.2147	24 2 9.9	8.235	14	21 34 48.70	1.9279	15 38 55.5	12.264
15	19 57 51.01	2.2083	23 53 52.4	8.348	15	21 36 44.22	1.9228	15 26 38.0	12.319
16	20 0 3.32	2.2020	23 45 28.1	8.461	16	21 38 39.44	1.9179	15 14 17.2	12.374
17	20 2 15.25	2.1957	23 36 57.1	8.571	17	21 40 34.37	1.9131	15 1 53.1	12.427
18	20 4 26.80	2.1893	23 28 19.6	8.680	18	21 42 29.01	1.9082	14 49 25.9	12.479
19	20 6 37.97	2.1830	23 19 35.5	8.789	19	21 44 23.36	1.9034	14 36 55.6	12.530
20	20 8 48.76	2.1766	23 10 44.9	8.896	20	21 46 17.42	1.8986	14 24 22.3	12.580
21	20 10 59.16	2.1703	23 1 48.0	9.001	21	21 48 11.19	1.8938	14 11 46.0	12.629
22	20 13 9.19	2.1640	22 52 44.8	9.105	22	21 50 4.68	1.8892	13 59 6.8	12.677
23	20 15 18.84	2.1576	22 43 35.4	9.208	23	21 51 57.90	1.8847	13 46 24.7	12.725
24	20 17 28.10	2.1512	S.22 34 19.8	9.310	24	21 53 50.85	1.8802	S.13 33 39.8	12.771

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 17.					SUNDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 53 50.85	1.8802	S. 13 33 39.8	12.771	0	23 20 10.67	1.7439	S. 2 44 42.7	13.956
1	21 55 43.53	1.8758	13 20 52.2	12.816	1	23 21 55.27	1.7428	2 30 45.2	13.961
2	21 57 35.95	1.8714	13 8 1.9	12.859	2	23 23 39.81	1.7418	2 16 47.4	13.967
3	21 59 28.10	1.8671	12 55 9.1	12.902	3	23 25 24.29	1.7408	2 2 49.2	13.972
4	22 1 20.00	1.8628	12 42 13.7	12.945	4	23 27 8.71	1.7400	1 48 50.8	13.975
5	22 3 11.64	1.8586	12 29 15.7	12.987	5	23 28 53.09	1.7392	1 34 52.2	13.978
6	22 5 3.03	1.8544	12 16 15.3	13.027	6	23 30 37.42	1.7385	1 20 53.4	13.981
7	22 6 54.17	1.8504	12 3 12.5	13.066	7	23 32 21.71	1.7379	1 6 54.5	13.982
8	22 8 45.08	1.8465	11 50 7.4	13.104	8	23 34 5.97	1.7373	0 52 55.5	13.983
9	22 10 35.75	1.8425	11 37 0.0	13.142	9	23 35 50.19	1.7368	0 38 56.5	13.983
10	22 12 26.18	1.8387	11 23 50.4	13.178	10	23 37 34.38	1.7364	0 24 57.5	13.983
11	22 14 16.39	1.8349	11 10 38.7	13.213	11	23 39 18.56	1.7361	S. 0 10 58.5	13.983
12	22 16 6.37	1.8312	10 57 24.8	13.248	12	23 41 2.72	1.7358	N. 0 3 0.5	13.982
13	22 17 56.13	1.8275	10 44 8.9	13.282	13	23 42 46.86	1.7357	0 16 59.4	13.980
14	22 19 45.67	1.8239	10 30 51.0	13.315	14	23 44 31.00	1.7356	0 30 58.1	13.976
15	22 21 35.00	1.8204	10 17 31.1	13.347	15	23 46 15.13	1.7355	0 44 56.5	13.972
16	22 23 24.12	1.8169	10 4 9.3	13.378	16	23 47 59.26	1.7356	0 58 54.7	13.968
17	22 25 13.03	1.8135	9 50 45.7	13.409	17	23 49 43.40	1.7357	1 12 52.7	13.964
18	22 27 1.74	1.8102	9 37 20.2	13.439	18	23 51 27.55	1.7359	1 26 50.4	13.958
19	22 28 50.26	1.8070	9 23 53.0	13.467	19	23 53 11.71	1.7362	1 40 47.7	13.952
20	22 30 38.58	1.8038	9 10 24.2	13.494	20	23 54 55.89	1.7365	1 54 44.6	13.946
21	22 32 26.71	1.8007	8 56 53.7	13.521	21	23 56 40.09	1.7369	2 8 41.2	13.939
22	22 34 14.66	1.7977	8 43 21.6	13.548	22	23 58 24.32	1.7374	2 22 37.3	13.930
23	22 36 2.43	1.7947	S. 8 29 48.0	13.573	23	0 0 8.58	1.7379	N. 2 36 32.8	13.921
	SATURDAY 18.					MONDAY 20.			
0	22 37 50.02	1.7917	S. 8 16 12.8	13.598	0	0 1 52.87	1.7385	N. 2 50 27.8	13.912
1	22 39 37.44	1.7889	8 2 36.2	13.622	1	0 3 37.20	1.7393	3 4 22.2	13.902
2	22 41 24.69	1.7862	7 48 58.2	13.644	2	0 5 21.58	1.7402	3 18 16.0	13.892
3	22 43 11.78	1.7835	7 35 18.9	13.666	3	0 7 6.02	1.7411	3 32 9.2	13.880
4	22 44 58.71	1.7809	7 21 38.3	13.687	4	0 8 50.51	1.7420	3 46 1.6	13.867
5	22 46 45.49	1.7784	7 7 56.4	13.708	5	0 10 35.06	1.7430	3 59 53.3	13.855
6	22 48 32.12	1.7759	6 54 13.3	13.728	6	0 12 19.67	1.7441	4 13 44.2	13.842
7	22 50 18.60	1.7735	6 40 29.1	13.747	7	0 14 4.35	1.7452	4 27 34.3	13.827
8	22 52 4.94	1.7712	6 26 43.7	13.766	8	0 15 49.10	1.7465	4 41 23.5	13.812
9	22 53 51.14	1.7689	6 12 57.2	13.783	9	0 17 33.93	1.7479	4 55 11.8	13.797
10	22 55 37.21	1.7667	5 59 9.7	13.799	10	0 19 18.85	1.7493	5 8 59.1	13.781
11	22 57 23.15	1.7647	5 45 21.3	13.815	11	0 21 3.85	1.7507	5 22 45.5	13.765
12	22 59 8.97	1.7627	5 31 31.9	13.830	12	0 22 48.94	1.7523	5 36 30.9	13.747
13	23 0 54.67	1.7607	5 17 41.7	13.844	13	0 24 34.13	1.7540	5 50 15.2	13.729
14	23 2 40.25	1.7588	5 3 50.6	13.858	14	0 26 19.42	1.7557	6 3 58.4	13.711
15	23 4 25.72	1.7570	4 49 58.7	13.872	15	0 28 4.81	1.7574	6 17 40.5	13.692
16	23 6 11.09	1.7552	4 36 6.0	13.884	16	0 29 50.31	1.7593	6 31 21.4	13.671
17	23 7 56.35	1.7535	4 22 12.6	13.895	17	0 31 35.93	1.7613	6 45 1.0	13.650
18	23 9 41.51	1.7519	4 8 18.6	13.906	18	0 33 21.67	1.7633	6 58 39.4	13.629
19	23 11 26.58	1.7504	3 54 23.9	13.916	19	0 35 7.53	1.7654	7 12 16.5	13.607
20	23 13 11.56	1.7489	3 40 28.7	13.925	20	0 36 53.52	1.7676	7 25 52.2	13.584
21	23 14 56.45	1.7475	3 26 32.9	13.934	21	0 38 39.64	1.7698	7 39 26.6	13.561
22	23 16 41.26	1.7463	3 12 36.6	13.942	22	0 40 25.90	1.7722	7 52 59.6	13.537
23	23 18 26.00	1.7451	2 58 39.9	13.949	23	0 42 12.30	1.7746	8 6 31.1	13.512
24	23 20 10.67	1.7439	S. 2 44 42.7	13.956	24	0 43 58.85	1.7771	N. 8 20 1.0	13.486

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 21.					THURSDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 43 58.85	1.7771	N. 8 20 1.0	13.486	0	2 13 35.52	1.9850	N.18 23 14.1	11.315
1	0 45 45.55	1.7797	8 33 29.4	13.460	1	2 15 34.80	1.9911	18 34 31.0	11.247
2	0 47 32.41	1.7823	8 46 56.2	13.433	2	2 17 34.45	1.9973	18 45 43.8	11.178
3	0 49 19.43	1.7850	9 0 21.4	13.406	3	2 19 34.48	2.0036	18 56 52.4	11.108
4	0 51 6.61	1.7878	9 13 44.9	13.377	4	2 21 34.88	2.0098	19 7 56.7	11.037
5	0 52 53.96	1.7907	9 27 6.6	13.348	5	2 23 35.65	2.0160	19 18 56.8	10.965
6	0 54 41.49	1.7937	9 40 26.6	13.318	6	2 25 36.80	2.0224	19 29 52.5	10.891
7	0 56 29.20	1.7967	9 53 44.8	13.288	7	2 27 38.34	2.0288	19 40 43.7	10.816
8	0 58 17.09	1.7997	10 7 1.1	13.257	8	2 29 40.26	2.0352	19 51 30.4	10.740
9	1 0 5.17	1.8029	10 20 15.6	13.225	9	2 31 42.57	2.0418	20 2 12.5	10.662
10	1 1 53.44	1.8062	10 33 28.1	13.192	10	2 33 45.28	2.0484	20 12 49.9	10.584
11	1 3 41.91	1.8095	10 46 38.6	13.158	11	2 35 48.38	2.0550	20 23 22.6	10.505
12	1 5 30.58	1.8129	10 59 47.0	13.123	12	2 37 51.88	2.0617	20 33 50.5	10.424
13	1 7 19.46	1.8164	11 12 53.4	13.088	13	2 39 55.79	2.0685	20 44 13.5	10.342
14	1 9 8.55	1.8200	11 25 57.6	13.052	14	2 42 0.10	2.0753	20 54 31.6	10.259
15	1 10 57.86	1.8237	11 38 59.6	13.015	15	2 44 4.82	2.0821	21 4 44.6	10.174
16	1 12 47.39	1.8273	11 51 59.4	12.978	16	2 46 9.95	2.0890	21 14 52.5	10.089
17	1 14 37.13	1.8311	12 4 57.0	12.941	17	2 48 15.50	2.0960	21 24 55.3	10.003
18	1 16 27.12	1.8349	12 17 52.3	12.902	18	2 50 21.47	2.1030	21 34 52.9	9.915
19	1 18 17.33	1.8389	12 30 45.2	12.862	19	2 52 27.86	2.1100	21 44 45.1	9.825
20	1 20 7.79	1.8430	12 43 35.7	12.821	20	2 54 34.67	2.1170	21 54 31.9	9.735
21	1 21 58.49	1.8471	12 56 23.7	12.779	21	2 56 41.90	2.1241	22 4 13.3	9.643
22	1 23 49.44	1.8512	13 9 9.2	12.737	22	2 58 49.56	2.1312	22 13 49.1	9.549
23	1 25 40.64	1.8554	N.13 21 52.1	12.694	23	3 0 57.65	2.1384	N.22 23 19.2	9.454
	WEDNESDAY 22.					FRIDAY 24.			
0	1 27 32.09	1.8597	N.13 34 32.4	12.650	0	3 3 6.17	2.1456	N.22 32 43.6	9.358
1	1 29 23.80	1.8641	13 47 10.1	12.605	1	3 5 15.12	2.1529	22 42 2.2	9.262
2	1 31 15.78	1.8687	13 59 45.0	12.559	2	3 7 24.51	2.1602	22 51 15.0	9.164
3	1 33 8.04	1.8732	14 12 17.1	12.512	3	3 9 34.34	2.1675	23 0 21.9	9.064
4	1 35 0.57	1.8778	14 24 46.4	12.465	4	3 11 44.61	2.1747	23 9 22.7	8.963
5	1 36 53.38	1.8825	14 37 12.9	12.417	5	3 13 55.31	2.1820	23 18 17.4	8.861
6	1 38 46.47	1.8872	14 49 36.4	12.367	6	3 16 6.45	2.1894	23 27 6.0	8.757
7	1 40 39.85	1.8921	15 1 56.9	12.317	7	3 18 18.04	2.1968	23 35 48.3	8.652
8	1 42 33.52	1.8970	15 14 14.4	12.266	8	3 20 30.07	2.2042	23 44 24.2	8.544
9	1 44 27.49	1.9020	15 26 28.8	12.213	9	3 22 42.55	2.2117	23 52 53.6	8.436
10	1 46 21.76	1.9071	15 38 40.0	12.160	10	3 24 55.47	2.2191	24 1 16.5	8.327
11	1 48 16.34	1.9122	15 50 48.0	12.107	11	3 27 8.84	2.2265	24 9 32.9	8.217
12	1 50 11.22	1.9174	16 2 52.8	12.053	12	3 29 22.65	2.2339	24 17 42.6	8.105
13	1 52 6.42	1.9227	16 14 54.3	11.997	13	3 31 36.91	2.2413	24 25 45.5	7.992
14	1 54 1.94	1.9280	16 26 52.4	11.939	14	3 33 51.61	2.2488	24 33 41.6	7.876
15	1 55 57.78	1.9333	16 38 47.0	11.881	15	3 36 6.77	2.2564	24 41 30.7	7.759
16	1 57 53.94	1.9388	16 50 38.1	11.822	16	3 38 22.38	2.2638	24 49 12.7	7.642
17	1 59 50.44	1.9444	17 2 25.7	11.763	17	3 40 38.43	2.2712	24 56 47.7	7.523
18	2 1 47.27	1.9500	17 14 9.7	11.703	18	3 42 54.93	2.2787	25 4 15.5	7.403
19	2 3 44.44	1.9557	17 25 50.0	11.641	19	3 45 11.88	2.2862	25 11 36.0	7.281
20	2 5 41.96	1.9615	17 37 26.6	11.577	20	3 47 29.27	2.2936	25 18 49.2	7.158
21	2 7 39.82	1.9673	17 48 59.3	11.513	21	3 49 47.11	2.3010	25 25 54.9	7.033
22	2 9 38.03	1.9732	18 0 28.2	11.449	22	3 52 5.39	2.3083	25 32 53.1	6.907
23	2 11 36.60	1.9791	18 11 53.2	11.382	23	3 54 24.11	2.3157	25 39 43.7	6.776
24	2 13 35.52	1.9850	N.18 23 14.1	11.315	24	3 56 43.28	2.3231	N.25 46 26.5	6.648

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 56 43.28	2.3231	N.25 46 26.5	6.648
1	3 59 2.89	2.3304	25 53 1.5	6.518
2	4 1 22.93	2.3377	25 59 28.7	6.387
3	4 3 43.41	2.3450	26 5 48.0	6.254
4	4 6 4.33	2.3522	26 11 59.2	6.119
5	4 8 25.68	2.3594	26 18 2.3	5.982
6	4 10 47.46	2.3666	26 23 57.1	5.844
7	4 13 9.67	2.3737	26 29 43.6	5.705
8	4 15 32.30	2.3808	26 35 21.7	5.565
9	4 17 55.36	2.3878	26 40 51.4	5.424
10	4 20 18.84	2.3947	26 46 12.6	5.281
11	4 22 42.73	2.4016	26 51 25.1	5.135
12	4 25 7.03	2.4084	26 56 28.8	4.989
13	4 27 31.74	2.4152	27 1 23.7	4.842
14	4 29 56.86	2.4220	27 6 9.8	4.693
15	4 32 22.38	2.4287	27 10 46.9	4.543
16	4 34 48.30	2.4352	27 15 15.0	4.392
17	4 37 14.60	2.4416	27 19 33.9	4.238
18	4 39 41.29	2.4481	27 23 43.6	4.084
19	4 42 8.37	2.4544	27 27 44.0	3.929
20	4 44 35.82	2.4606	27 31 35.1	3.772
21	4 47 3.64	2.4668	27 35 16.7	3.614
22	4 49 31.83	2.4729	27 38 48.8	3.455
23	4 52 0.39	2.4789	N.27 42 11.3	3.295

SUNDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	4 54 29.30	2.4847	N.27 45 24.2	3.133
1	4 56 58.56	2.4905	27 48 27.3	2.970
2	4 59 28.16	2.4962	27 51 20.6	2.806
3	5 1 58.10	2.5018	27 54 4.0	2.640
4	5 4 28.37	2.5073	27 56 37.4	2.474
5	5 6 58.97	2.5126	27 59 0.9	2.307
6	5 9 29.88	2.5178	28 1 14.3	2.138
7	5 12 1.10	2.5229	28 3 17.5	1.968
8	5 14 32.63	2.5279	28 5 10.5	1.797
9	5 17 4.45	2.5327	28 6 53.2	1.626
10	5 19 36.56	2.5375	28 8 25.6	1.452
11	5 22 8.95	2.5421	28 9 47.5	1.277
12	5 24 41.61	2.5466	28 10 58.9	1.102
13	5 27 14.54	2.5510	28 11 59.8	0.927
14	5 29 47.73	2.5552	28 12 50.1	0.751
15	5 32 21.16	2.5592	28 13 29.9	0.574
16	5 34 54.83	2.5632	28 13 59.0	0.395
17	5 37 28.74	2.5670	28 14 17.3	0.216
18	5 40 2.87	2.5707	28 14 24.9	+ 0.037
19	5 42 37.22	2.5742	28 14 21.7	− 0.144
20	5 45 11.77	2.5775	28 14 7.6	0.326
21	5 47 46.52	2.5807	28 13 42.5	0.509
22	5 50 21.46	2.5838	28 13 6.5	0.692
23	5 52 56.58	2.5867	28 12 19.5	0.875
24	5 55 31.86	2.5894	N.28 11 21.5	1.059

MONDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 55 31.86	2.5894	N.28 11 21.5	1.059
1	5 58 7.31	2.5921	28 10 12.4	1.244
2	6 0 42.91	2.5945	28 8 52.2	1.428
3	6 3 18.65	2.5967	28 7 21.0	1.613
4	6 5 54.52	2.5989	28 5 38.6	1.800
5	6 8 30.52	2.6009	28 3 45.0	1.987
6	6 11 6.63	2.6028	28 1 40.2	2.174
7	6 13 42.85	2.6044	27 59 24.2	2.361
8	6 16 19.16	2.6058	27 56 56.9	2.548
9	6 18 55.55	2.6072	27 54 18.4	2.736
10	6 21 32.02	2.6083	27 51 28.6	2.924
11	6 24 8.55	2.6094	27 48 27.5	3.112
12	6 26 45.15	2.6103	27 45 15.1	3.301
13	6 29 21.79	2.6109	27 41 51.4	3.489
14	6 31 58.46	2.6114	27 38 16.4	3.677
15	6 34 35.16	2.6118	27 34 30.1	3.866
16	6 37 11.88	2.6121	27 30 32.5	4.054
17	6 39 48.61	2.6122	27 26 23.6	4.242
18	6 42 25.34	2.6120	27 22 3.5	4.429
19	6 45 2.05	2.6118	27 17 32.1	4.617
20	6 47 38.75	2.6114	27 12 49.4	4.806
21	6 50 15.42	2.6108	27 7 55.4	4.993
22	6 52 52.05	2.6101	27 2 50.2	5.181
23	6 55 28.63	2.6092	N.26 57 33.7	5.368

TUESDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	6 58 5.15	2.6082	N.26 52 6.0	5.555
1	7 0 41.61	2.6070	26 46 27.1	5.742
2	7 3 17.99	2.6057	26 40 37.0	5.927
3	7 5 54.29	2.6043	26 34 35.9	6.111
4	7 8 30.50	2.6026	26 28 23.7	6.296
5	7 11 6.61	2.6008	26 22 0.4	6.481
6	7 13 42.60	2.5989	26 15 26.0	6.665
7	7 16 18.48	2.5970	26 8 40.6	6.847
8	7 18 54.24	2.5948	26 1 44.3	7.029
9	7 21 29.86	2.5925	25 54 37.1	7.211
10	7 24 5.34	2.5901	25 47 19.0	7.392
11	7 26 40.67	2.5876	25 39 50.0	7.573
12	7 29 15.85	2.5849	25 32 10.2	7.753
13	7 31 50.86	2.5821	25 24 19.7	7.931
14	7 34 25.70	2.5792	25 16 18.5	8.107
15	7 37 0.36	2.5762	25 8 6.8	8.283
16	7 39 34.84	2.5730	24 59 44.5	8.459
17	7 42 9.12	2.5697	24 51 11.7	8.634
18	7 44 43.20	2.5663	24 42 28.4	8.808
19	7 47 17.07	2.5628	24 33 34.7	8.980
20	7 49 50.74	2.5593	24 24 30.8	9.150
21	7 52 24.19	2.5557	24 15 16.7	9.320
22	7 54 57.42	2.5519	24 5 52.4	9.490
23	7 57 30.42	2.5480	23 56 17.9	9.658
24	8 0 3.18	2.5440	N.23 46 33.4	9.824

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 29.			
h m s	s	° ′ ″	″
8 0 3.18	2.5440	N.23 46 33.4	9.824
8 2 35.70	2.5400	23 36 39.0	9.989
8 5 7.98	2.5359	23 26 34.7	10.153
8 7 40.01	2.5317	23 16 20.6	10.316
8 10 11.79	2.5274	23 5 56.8	10.477
8 12 43.30	2.5230	22 55 23.4	10.636
8 15 14.55	2.5187	22 44 40.5	10.794
8 17 45.54	2.5142	22 33 48.1	10.952
8 20 16.25	2.5096	22 22 46.3	11.108
8 22 46.69	2.5050	22 11 35.2	11.262
8 25 16.85	2.5003	22 0 14.9	11.413
8 27 46.73	2.4956	21 48 45.6	11.563
8 30 16.32	2.4908	21 37 7.3	11.713
8 32 45.63	2.4861	21 25 20.0	11.862
8 35 14.65	2.4812	21 13 23.9	12.007
8 37 43.37	2.4763	21 1 19.2	12.150
8 40 11.80	2.4713	20 49 5.9	12.293
8 42 39.93	2.4663	20 36 44.0	12.435
8 45 7.76	2.4613	20 24 13.7	12.574
8 47 35.29	2.4563	20 11 35.1	12.712
8 50 2.52	2.4512	19 58 48.3	12.848
8 52 29.44	2.4462	19 45 53.4	12.982
8 54 56.06	2.4411	19 32 50.5	13.113
8 57 22.37	2.4360	N.19 19 39.8	13.243
THURSDAY 30.			
8 59 48.38	2.4309	N.19 6 21.3	13.372
9 2 14.08	2.4258	18 52 55.1	13.499
9 4 39.47	2.4206	18 39 21.4	13.624
9 7 4.55	2.4154	18 25 40.2	13.747
9 9 29.32	2.4103	18 11 51.7	13.868
9 11 53.79	2.4052	17 57 56.0	13.987
9 14 17.95	2.4001	17 43 53.2	14.105
9 16 41.80	2.3949	17 29 43.4	14.221
9 19 5.34	2.3898	17 15 26.7	14.334
9 21 28.57	2.3847	17 1 3.3	14.446
9 23 51.50	2.3797	16 46 33.2	14.556
9 26 14.13	2.3746	16 31 56.6	14.663
9 28 36.45	2.3695	16 17 13.6	14.769
9 30 58.47	2.3645	16 2 24.3	14.872
9 33 20.19	2.3595	15 47 28.9	14.974
9 35 41.61	2.3545	15 32 27.4	15.074
9 38 2.73	2.3496	15 17 20.0	15.172
9 40 23.56	2.3447	15 2 6.8	15.268
9 42 44.09	2.3398	14 46 47.9	15.362
9 45 4.33	2.3349	14 31 23.4	15.453
9 47 24.28	2.3302	14 15 53.5	15.543
9 49 43.95	2.3254	14 0 18.2	15.632
9 52 3.33	2.3207	13 44 37.7	15.718
9 54 22.43	2.3159	13 28 52.1	15.802
9 56 41.24	2.3112	N.13 13 1.5	15.883

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 31.				
	h m s	s	° ′ ″	″
0	9 56 41.24	2.3112	N.13 13 1.5	15.883
1	9 58 59.78	2.3067	12 57 6.1	15.962
2	10 1 18.05	2.3022	12 41 6.0	16.041
3	10 3 36.05	2.2977	12 25 1.2	16.117
4	10 5 53.78	2.2933	12 8 52.0	16.190
5	10 8 11.25	2.2889	11 52 38.4	16.262
6	10 10 28.45	2.2846	11 36 20.5	16.332
7	10 12 45.40	2.2804	11 19 58.5	16.400
8	10 15 2.10	2.2762	11 3 32.5	16.466
9	10 17 18.54	2.2720	10 47 2.6	16.529
10	10 19 34.74	2.2680	10 30 29.0	16.591
11	10 21 50.70	2.2639	10 13 51.7	16.651
12	10 24 6.41	2.2599	9 57 10.9	16.708
13	10 26 21.89	2.2561	9 40 26.7	16.764
14	10 28 37.14	2.2523	9 23 39.2	16.818
15	10 30 52.17	2.2486	9 6 48.5	16.870
16	10 33 6.97	2.2448	8 49 54.8	16.919
17	10 35 21.55	2.2412	8 32 58.2	16.967
18	10 37 35.92	2.2377	8 15 58.8	17.012
19	10 39 50.08	2.2343	7 58 56.7	17.056
20	10 42 4.04	2.2309	7 41 52.1	17.097
21	10 44 17.79	2.2275	7 24 45.0	17.137
22	10 46 31.34	2.2243	7 7 35.6	17.175
23	10 48 44.71	2.2212	N. 6 50 24.0	17.212
SATURDAY, FEBRUARY 1.				
0	10 50 57.89	2.2182	N. 6 33 10.2	17.246

PHASES OF THE MOON.

			d	h	m
☾	Last Quarter . . .	Jan.	7	3	24.9
●	New Moon		14	10	19.4
☽	First Quarter		22	14	42.3
○	Full Moon		29	20	55.3

			d	h
☾	Perigee	Jan.	3	16.1
☾	Apogee		19	16.4
☾	Perigee		31	13.9

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	α Arietis W.	72 31 3	2297	74 17 7	2288	76 3 24	2280	77 49 53	2272
	Aldebaran W.	41 42 50	2441	43 25 27	2422	45 8 30	2405	46 51 57	2389
	Regulus E.	39 23 47	2274	37 37 10	2267	35 50 22	2259	34 3 22	2252
	Spica E.	93 25 17	2277	91 38 43	2269	89 51 58	2261	88 5 1	2254
2	α Arietis W.	86 44 49	2243	88 32 13	2238	90 19 44	2234	92 7 21	2231
	Aldebaran W.	55 34 12	2331	57 19 27	2322	59 4 54	2314	60 50 33	2307
	Spica E.	79 7 51	2225	77 20 0	2220	75 32 3	2216	73 44 0	2212
	SATURN E.	103 5 40	2283	101 19 16	2279	99 32 45	2274	97 46 7	2270
	VENUS E.	114 5 14	2637	112 27 9	2632	110 48 57	2626	109 10 38	2621
3	α Arietis W.	101 6 28	2220	102 54 25	2220	104 42 22	2220	106 30 19	2220
	Aldebaran W.	69 40 56	2284	71 27 19	2282	73 13 45	2280	75 0 14	2279
	Pollux W.	26 24 48	2232	28 12 28	2228	30 0 14	2225	31 48 5	2222
	Spica E.	64 42 41	2203	62 54 18	2202	61 5 53	2202	59 17 28	2202
	SATURN E.	88 51 50	2259	87 4 50	2258	85 17 49	2258	83 30 48	2258
	VENUS E.	100 57 43	2607	99 18 58	2607	97 40 12	2606	96 1 25	2605
	Antares E.	110 35 38	2200	108 47 11	2200	106 58 43	2200	105 10 15	2199
4	Aldebaran W.	83 52 51	2281	85 39 19	2283	87 25 44	2285	89 12 6	2288
	Pollux W.	40 47 53	2220	42 35 50	2221	44 23 46	2223	46 11 39	2225
	Spica E.	50 15 38	2209	48 27 24	2211	46 39 13	2214	44 51 7	2217
	SATURN E.	74 36 2	2267	72 49 14	2270	71 2 30	2273	69 15 51	2277
	VENUS E.	87 47 40	2612	86 9 2	2615	84 30 27	2618	82 51 57	2622
	Antares E.	96 8 4	2205	94 19 44	2208	92 31 28	2210	90 43 16	2213
	MARS E.	104 23 54	2444	102 41 22	2446	100 58 53	2448	99 16 27	2452
5	Aldebaran W.	98 2 36	2309	99 48 22	2315	101 34 0	2320	103 19 30	2327
	Pollux W.	55 10 3	2242	56 57 28	2247	58 44 46	2251	60 31 58	2256
	JUPITER W.	39 59 28	2202	41 47 52	2206	43 36 10	2211	45 24 21	2216
	SATURN E.	60 24 15	2303	58 38 20	2309	56 52 34	2316	55 6 58	2324
	VENUS E.	74 40 51	2646	73 2 58	2652	71 25 13	2658	69 47 37	2664
	Antares E.	81 43 31	2233	79 55 53	2237	78 8 21	2242	76 20 56	2247
	MARS E.	90 45 33	2472	89 3 40	2476	87 21 53	2482	85 40 14	2487
	SUN E.	118 10 30	2566	116 30 48	2571	114 51 13	2576	113 11 44	2581
6	Pollux W.	69 26 4	2283	71 12 28	2289	72 58 44	2295	74 44 51	2302
	JUPITER W.	54 23 24	2243	56 10 48	2249	57 58 3	2255	59 45 9	2261
	Regulus W.	32 29 34	2275	34 16 10	2282	36 2 36	2288	37 48 53	2294
	SATURN E.	46 21 52	2367	44 37 30	2378	42 53 24	2389	41 9 34	2401
	VENUS E.	61 41 55	2701	60 5 17	2710	58 28 51	2719	56 52 36	2728
	Antares E.	67 25 52	2276	65 39 17	2282	63 52 51	2288	62 6 34	2295
	MARS E.	77 14 1	2517	75 33 12	2525	73 52 33	2532	72 12 4	2538
	SUN E.	104 56 14	2610	103 17 33	2616	101 39 0	2623	100 0 36	2629
7	Pollux W.	83 33 2	2335	85 18 11	2342	87 3 10	2348	88 47 59	2355
	JUPITER W.	68 38 19	2294	70 24 28	2300	72 10 27	2307	73 56 16	2314
	Regulus W.	46 37 55	2328	48 23 14	2335	50 8 22	2342	51 53 20	2349
	VENUS E.	48 54 31	2779	47 19 35	2790	45 44 54	2802	44 10 29	2814
	Antares E.	53 17 35	2328	51 32 17	2335	49 47 9	2342	48 2 11	2350
	MARS E.	63 52 7	2576	62 12 39	2584	60 33 22	2592	58 54 16	2599
	SUN E.	91 50 56	2665	90 13 29	2672	88 36 12	2680	86 59 5	2688

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV$^{h.}$	P. L. of Diff.	XVIII$^{h.}$	P. L. of Diff.	XXI$^{h.}$	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	α Arietis	W.	79 36 33	2266	81 23 23	2259	83 10 23	2253	84 57 32	2247
	Aldebaran	W.	48 35 47	2375	50 19 57	2362	52 4 26	2351	53 49 11	2340
	Regulus	E.	32 16 12	2245	30 28 52	2239	28 41 22	2233	26 53 44	2228
	Spica	E.	86 17 54	2247	84 30 37	2241	82 43 10	2235	80 55 35	2229
2	α Arietis	W.	93 55 3	2227	95 42 50	2225	97 30 40	2223	99 18 33	2222
	Aldebaran	W.	62 36 22	2301	64 22 20	2296	66 8 26	2291	67 54 38	2287
	Spica	E.	71 55 51	2210	70 7 38	2208	68 19 22	2206	66 31 3	2204
	SATURN	E.	95 59 24	2267	94 12 36	2264	92 25 44	2262	90 38 48	2260
	VENUS	E.	107 32 12	2618	105 53 41	2614	104 15 5	2612	102 36 26	2609
3	α Arietis	W.	108 18 16	2221	110 6 12	2223	111 54 5	2225	113 41 56	2227
	Aldebaran	W.	76 46 45	2278	78 33 17	2278	80 19 49	2278	82 6 21	2279
	Pollux	W.	33 36 0	2220	35 23 57	2219	37 11 56	2219	38 59 55	2220
	Spica	E.	57 29 3	2202	55 40 39	2203	53 52 16	2205	52 3 56	2206
	SATURN	E.	81 43 47	2259	79 56 47	2260	78 9 49	2262	76 22 54	2264
	VENUS	E.	94 22 37	2606	92 43 50	2607	91 5 5	2608	89 26 21	2610
	Antares	E.	103 21 46	2200	101 33 18	2200	99 44 51	2202	97 56 26	2204
4	Aldebaran	W.	90 58 23	2291	92 44 35	2295	94 30 42	2300	96 16 42	2304
	Pollux	W.	47 59 29	2228	49 47 15	2231	51 34 56	2235	53 22 32	2238
	Spica	E.	43 3 5	2221	41 15 9	2225	39 27 18	2229	37 39 34	2234
	SATURN	E.	67 29 18	2281	65 42 51	2286	63 56 31	2291	62 10 19	2297
	VENUS	E.	81 13 32	2626	79 35 13	2630	77 56 59	2635	76 18 52	2640
	Antares	E.	88 55 8	2216	87 7 5	2220	85 19 8	2224	83 31 16	2229
	MARS	E.	97 34 6	2455	95 51 49	2459	94 9 38	2463	92 27 33	2467
5	Aldebaran	W.	105 4 50	2333	106 50 1	2341	108 35 1	2348	110 19 50	2356
	Pollux	W.	62 19 3	2261	64 6 0	2266	65 52 50	2272	67 39 31	2277
	JUPITER	W.	47 12 25	2220	49 0 22	2226	50 48 11	2231	52 35 52	2237
	SATURN	E.	53 21 33	2331	51 36 19	2339	49 51 17	2348	48 6 28	2357
	VENUS	E.	68 10 9	2672	66 32 51	2678	64 55 42	2686	63 18 43	2694
	Antares	E.	74 33 39	2253	72 46 30	2258	70 59 29	2264	69 12 36	2270
	MARS	E.	83 58 43	2493	82 17 20	2499	80 36 5	2505	78 54 59	2511
	SUN	E.	111 32 23	2586	109 53 9	2591	108 14 2	2598	106 35 4	2604
6	Pollux	W.	76 30 48	2308	78 16 36	2315	80 2 14	2321	81 47 43	2328
	JUPITER	W.	61 32 6	2267	63 18 54	2274	65 5 32	2281	66 52 0	2287
	Regulus	W.	39 35 1	2301	41 20 59	2308	43 6 47	2314	44 52 26	2321
	SATURN	E.	39 26 1	2415	37 42 47	2428	35 59 52	2443	34 17 19	2459
	VENUS	E.	55 16 33	2737	53 40 42	2747	52 5 5	2757	50 29 41	2768
	Antares	E.	60 20 27	2301	58 34 29	2308	56 48 41	2315	55 3 3	2322
	MARS	E.	70 31 44	2545	68 51 34	2553	67 11 35	2561	65 31 46	2568
	SUN	E.	98 22 21	2636	96 44 15	2643	95 6 19	2651	93 28 33	2657
7	Pollux	W.	90 32 38	2363	92 17 6	2370	94 1 24	2377	95 45 32	2384
	JUPITER	W.	75 41 55	2321	77 27 24	2328	79 12 42	2335	80 57 50	2342
	Regulus	W.	53 38 8	2356	55 22 46	2364	57 7 13	2371	58 51 30	2378
	VENUS	E.	42 36 19	2827	41 2 26	2840	39 28 50	2855	37 55 33	2869
	Antares	E.	46 17 24	2357	44 32 47	2364	42 48 20	2371	41 4 4	2378
	MARS	E.	57 15 20	2608	55 36 36	2617	53 58 4	2625	52 19 43	2634
	SUN	E.	85 22 9	2695	83 45 23	2703	82 8 47	2710	80 32 21	2719

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Jupiter	W.	82 42 48	2349	84 27 36	2357	86 12 13	2364	87 56 40	2371
	Regulus	W.	60 35 36	2385	62 19 32	2392	64 3 18	2400	65 46 53	2407
	Antares	E.	39 19 58	2386	37 36 3	2393	35 52 18	2401	34 8 44	2408
	Mars	E.	50 41 34	2643	49 3 37	2652	47 25 52	2660	45 48 19	2669
	Sun	E.	78 56 6	2726	77 20 1	2735	75 44 7	2742	74 8 23	2750
9	Jupiter	W.	96 36 17	2408	98 19 41	2415	100 2 55	2422	101 45 59	2429
	Regulus	W.	74 22 12	2444	76 4 44	2451	77 47 6	2459	79 29 17	2467
	Mars	E.	37 43 46	2719	36 7 32	2731	34 31 33	2742	32 55 49	2754
	Sun	E.	66 12 23	2791	64 37 43	2798	63 3 13	2808	61 28 55	2815
10	Regulus	W.	87 57 34	2504	89 38 42	2512	91 19 39	2519	93 0 26	2527
	Spica	W.	33 58 23	2510	35 39 22	2517	37 20 11	2524	39 0 51	2532
	Sun	E.	53 40 5	2858	52 6 52	2866	50 33 50	2875	49 0 59	2884
11	Regulus	W.	101 21 40	2565	103 1 23	2573	104 40 55	2581	106 20 16	2589
	Spica	W.	47 21 34	2569	49 1 12	2577	50 40 39	2585	52 19 55	2592
	Sun	E.	41 19 37	2930	39 47 56	2939	38 16 27	2949	36 45 10	2959
12	Spica	W.	60 33 35	2632	62 11 46	2640	63 49 46	2649	65 27 35	2657
	Saturn	W.	36 17 58	2749	37 53 33	2750	39 29 6	2753	41 4 36	2756
	Sun	E.	29 12 3	3014	27 42 7	3026	26 12 27	3039	24 43 3	3053
16	Sun	W.	17 58 54	3362	19 21 54	3361	20 44 55	3363	22 7 54	3365
	α Arietis	E.	82 50 0	2934	81 18 24	2942	79 46 58	2950	78 15 43	2959
	Aldebaran	E.	114 12 41	3004	112 42 33	3010	111 12 33	3017	109 42 41	3023
17	Sun	W.	29 1 43	3390	30 24 11	3395	31 46 33	3401	33 8 48	3407
	α Arietis	E.	70 42 7	3001	69 11 55	3008	67 41 52	3016	66 11 59	3023
	Aldebaran	E.	102 15 28	3057	100 46 26	3064	99 17 32	3071	97 48 47	3077
18	Sun	W.	39 58 26	3435	41 20 3	3439	42 41 35	3445	44 3 1	3449
	α Arietis	E.	58 44 48	3058	57 15 47	3065	55 46 54	3071	54 18 9	3077
	Aldebaran	E.	90 26 55	3108	88 58 55	3113	87 31 1	3119	86 3 14	3124
19	Sun	W.	50 49 1	3467	52 10 2	3471	53 30 59	3472	54 51 54	3475
	α Arietis	E.	46 56 6	3104	45 28 1	3108	44 0 1	3113	42 32 7	3117
	Aldebaran	E.	78 45 47	3146	77 18 33	3150	75 51 24	3153	74 24 19	3158
20	Sun	W.	61 36 5	3478	62 56 54	3477	64 17 44	3476	65 38 35	3474
	Fomalhaut	W.	37 0 22	3985	38 12 16	3927	39 25 8	3875	40 38 53	3826
	Aldebaran	E.	67 9 49	3169	65 43 3	3172	64 16 20	3173	62 49 38	3174
21	Sun	W.	72 23 28	3459	73 44 38	3454	75 5 53	3449	76 27 14	3443
	Fomalhaut	W.	46 58 50	3639	48 16 42	3609	49 35 7	3580	50 54 3	3554
	Aldebaran	E.	55 36 30	3178	54 9 55	3178	52 43 20	3178	51 16 45	3179
	Pollux	E.	97 57 39	3070	96 28 53	3066	95 0 2	3061	93 31 5	3056
22	Sun	W.	83 15 47	3408	84 37 55	3399	86 0 13	3390	87 22 41	3380
	Fomalhaut	W.	57 35 37	3437	58 57 12	3416	60 19 10	3396	61 41 31	3376
	Aldebaran	E.	44 3 59	3183	42 37 29	3184	41 11 1	3187	39 44 36	3190
	Pollux	E.	86 4 37	3024	84 34 54	3017	83 5 2	3008	81 34 59	3000

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	JUPITER	W.	89 40 56	2378	91 25 2	2386	93 8 57	2393	94 52 42	2400
	Regulus	W.	67 30 18	2415	69 13 32	2422	70 56 36	2429	72 39 29	2436
	Antares	E.	32 25 20	2415	30 42 7	2423	28 59 5	2430	27 16 13	2438
	MARS	E.	44 10 58	2679	42 33 50	2689	40 56 55	2699	39 20 14	2709
	SUN	E.	72 32 50	2758	70 57 27	2766	69 22 15	2775	67 47 14	2784
9	JUPITER	W.	103 28 52	2437	105 11 34	2444	106 54 6	2452	108 36 27	2459
	Regulus	W.	81 11 17	2474	82 53 7	2481	84 34 47	2489	86 16 16	2497
	MARS	E.	31 20 21	2767	29 45 10	2781	28 10 17	2795	26 35 43	2810
	SUN	E.	59 54 47	2824	58 20 50	2832	56 47 4	2841	55 13 29	2849
10	Regulus	W.	94 41 2	2535	96 21 27	2542	98 1 42	2550	99 41 46	2557
	Spica	W.	40 41 20	2539	42 21 39	2546	44 1 48	2554	45 41 46	2561
	SUN	E.	47 28 20	2893	45 55 52	2901	44 23 35	2911	42 51 30	2920
11	Regulus	W.	107 59 26	2596	109 38 26	2605	111 17 14	2613	112 55 51	2621
	Spica	W.	53 59 1	2600	55 37 56	2608	57 16 40	2616	58 55 13	2624
	SUN	E.	35 14 6	2969	33 43 15	2980	32 12 37	2991	30 42 13	3002
12	Spica	W.	67 5 12	2666	68 42 38	2675	70 19 52	2683	71 56 55	2691
	SATURN	W.	42 40 1	2760	44 15 21	2764	45 50 36	2769	47 25 44	2775
	SUN	E.	23 13 56	3069	21 45 8	3084	20 16 39	3100	18 48 32	3116
16	SUN	W.	23 30 50	3369	24 53 42	3374	26 16 28	3379	27 39 9	3385
	α Arietis	E.	76 44 39	2967	75 13 45	2976	73 43 2	2984	72 12 29	2993
	Aldebaran	E.	108 12 57	3030	106 43 22	3038	105 13 56	3044	103 44 38	3051
17	SUN	W.	34 30 57	3413	35 52 59	3419	37 14 54	3424	38 36 43	3430
	α Arietis	E.	64 42 15	3030	63 12 40	3038	61 43 14	3045	60 13 57	3052
	Aldebaran	E.	96 20 9	3083	94 51 39	3090	93 23 17	3096	91 55 2	3102
18	SUN	W.	45 24 22	3454	46 45 38	3457	48 6 50	3461	49 27 58	3465
	α Arietis	E.	52 49 31	3082	51 21 0	3087	49 52 35	3093	48 24 17	3099
	Aldebaran	E.	84 35 33	3129	83 7 58	3133	81 40 29	3138	80 13 5	3143
19	SUN	W.	56 12 46	3476	57 33 37	3477	58 54 27	3478	60 15 16	3478
	α Arietis	E.	41 4 18	3121	39 36 34	3126	38 8 56	3130	36 41 23	3133
	Aldebaran	E.	72 57 19	3160	71 30 22	3163	70 3 28	3165	68 36 37	3168
20	SUN	W.	66 59 28	3472	68 20 23	3470	69 41 21	3466	71 2 23	3463
	Fomalhaut	W.	41 53 28	3783	43 8 48	3743	44 24 50	3705	45 41 32	3671
	Aldebaran	E.	61 22 58	3175	59 56 19	3177	58 29 42	3178	57 3 6	3178
21	SUN	W.	77 48 42	3438	79 10 16	3431	80 31 58	3423	81 53 48	3415
	Fomalhaut	W.	52 13 28	3528	53 33 21	3504	54 53 41	3480	56 14 27	3459
	Aldebaran	E.	49 50 11	3179	48 23 37	3180	46 57 4	3180	45 30 31	3181
	Pollux	E.	92 2 2	3051	90 32 52	3045	89 3 35	3039	87 34 10	3032
22	SUN	W.	88 45 20	3370	90 8 11	3359	91 31 14	3348	92 54 30	3336
	Fomalhaut	W.	63 4 15	3357	64 27 21	3338	65 50 49	3319	67 14 39	3300
	Aldebaran	E.	38 18 15	3194	36 51 59	3200	35 25 50	3207	33 59 49	3216
	Pollux	E.	80 4 46	2990	78 34 21	2981	77 3 44	2970	75 32 54	2960

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month	Name and Direction of Object		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Sun	W.	94 18 0	3325	95 41 43	3311	97 5 42	3298	98 29 56	3285
	Fomalhaut	W.	68 38 50	3282	70 3 22	3264	71 28 16	3247	72 53 30	3228
	α Pegasi	W.	46 31 24	3351	47 54 36	3321	49 18 23	3292	50 42 44	3263
	Pollux	E.	74 1 51	2949	72 30 34	2938	70 59 3	2926	69 27 17	2913
	Jupiter	E.	86 52 10	2897	85 19 47	2886	83 47 10	2873	82 14 17	2861
	Regulus	E.	110 55 20	2942	109 23 54	2931	107 52 14	2918	106 20 18	2906
24	Sun	W.	105 35 12	3210	107 1 9	3194	108 27 25	3178	109 54 1	3161
	Fomalhaut	W.	80 4 57	3141	81 32 17	3124	82 59 58	3107	84 27 59	3090
	α Pegasi	W.	57 52 33	3133	59 20 2	3109	60 48 1	3085	62 16 29	3062
	Pollux	E.	61 44 22	2846	60 10 54	2832	58 37 8	2817	57 3 2	2802
	Jupiter	E.	74 25 47	2795	72 51 12	2779	71 16 17	2765	69 41 3	2750
	Regulus	E.	98 36 32	2838	97 2 54	2823	95 28 56	2808	93 54 39	2792
25	Sun	W.	117 12 10	3073	118 40 53	3055	120 9 58	3035	121 39 27	3017
	α Pegasi	W.	69 45 50	2950	71 17 5	2928	72 48 48	2907	74 20 58	2887
	α Arietis	W.	26 22 33	2803	27 56 57	2777	29 31 55	2752	31 7 26	2727
	Pollux	E.	49 7 31	2728	47 31 21	2707	45 54 50	2690	44 17 57	2673
	Jupiter	E.	61 39 44	2669	60 2 23	2653	58 24 40	2636	56 46 34	2619
	Regulus	E.	85 58 1	2711	84 21 36	2694	82 44 48	2677	81 7 37	2659
26	α Pegasi	W.	82 8 26	2785	83 43 14	2765	85 18 28	2746	86 54 7	2727
	α Arietis	W.	39 12 49	2616	40 51 22	2595	42 30 24	2574	44 9 55	2553
	Pollux	E.	36 7 53	2590	34 28 44	2574	32 49 13	2557	31 9 19	2542
	Jupiter	E.	48 30 9	2531	46 49 39	2514	45 8 45	2496	43 27 26	2479
	Regulus	E.	72 55 43	2570	71 16 7	2552	69 36 6	2534	67 55 40	2516
27	α Pegasi	W.	94 58 28	2639	96 36 30	2623	98 14 54	2607	99 53 39	2592
	α Arietis	W.	52 34 28	2455	54 16 45	2436	55 59 28	2418	57 42 37	2399
	Regulus	E.	59 27 11	2426	57 44 13	2408	56 0 50	2391	54 17 2	2373
	Spica	E.	113 28 1	2429	111 45 7	2411	110 1 48	2393	108 18 3	2376
28	α Arietis	W.	66 24 50	2313	68 10 30	2297	69 56 34	2281	71 43 1	2266
	Aldebaran	W.	35 51 55	2511	37 32 53	2479	39 14 36	2449	40 57 1	2421
	Regulus	E.	45 31 55	2291	43 45 42	2276	41 59 7	2261	40 12 10	2245
	Spica	E.	99 33 15	2294	97 47 6	2278	96 0 34	2263	94 13 40	2248
29	α Arietis	W.	80 40 36	2198	82 29 7	2186	84 17 55	2174	86 7 1	2164
	Aldebaran	W.	49 38 11	2309	51 23 58	2290	53 10 12	2273	54 56 51	2258
	Spica	E.	85 13 54	2181	83 24 58	2170	81 35 45	2159	79 46 15	2148
	Saturn	E.	110 56 50	2234	109 9 13	2221	107 21 17	2209	105 33 3	2198
30	α Arietis	W.	95 16 15	2119	97 6 45	2113	98 57 25	2107	100 48 14	2101
	Aldebaran	W.	63 55 25	2194	65 44 2	2184	67 32 53	2176	69 21 57	2168
	Spica	E.	70 34 59	2103	68 44 5	2096	66 53 0	2090	65 1 46	2085
	Saturn	E.	96 27 56	2151	94 38 15	2143	92 48 22	2137	90 58 19	2131
31	Aldebaran	W.	78 29 48	2142	80 19 43	2139	82 9 42	2138	83 59 43	2137
	Pollux	W.	35 21 41	2082	37 13 8	2079	39 4 40	2077	40 56 15	2075
	Spica	E.	55 43 45	2067	53 51 55	2065	52 0 2	2064	50 8 8	2064
	Saturn	E.	81 46 14	2114	79 55 36	2112	78 4 55	2111	76 14 13	2112
	Antares	E.	101 36 14	2063	99 44 18	2062	97 52 20	2061	96 0 20	2061

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	SUN	W.	99 54 25	3271	101 19 10	3256	102 44 13	3241	104 9 33	3225
	Fomalhaut	W.	74 19 6	3210	75 45 3	3193	77 11 20	3176	78 37 58	3158
	α Pegasi	W.	52 7 39	3236	53 33 6	3209	54 59 4	3183	56 25 33	3158
	Pollux	E.	67 55 15	2901	66 22 57	2888	64 50 23	2874	63 17 31	2861
	JUPITER	E.	80 41 9	2848	79 7 44	2836	77 34 3	2822	76 0 4	2808
	Regulus	E.	104 48 7	2893	103 15 39	2880	101 42 54	2866	100 9 52	2852
24	SUN	W.	111 20 57	3143	112 48 14	3127	114 15 51	3109	115 43 50	3091
	Fomalhaut	W.	85 56 21	3073	87 25 4	3056	88 54 7	3040	90 23 30	3023
	α Pegasi	W.	63 45 25	3039	65 14 50	3017	66 44 42	2994	68 15 2	2972
	Pollux	E.	55 28 37	2787	53 53 52	2771	52 18 46	2755	50 43 19	2739
	JUPITER	E.	68 5 29	2734	66 29 34	2719	64 53 19	2702	63 16 42	2687
	Regulus	E.	92 20 1	2777	90 45 3	2761	89 9 44	2745	87 34 4	2728
25	SUN	W.	123 9 19	2997	124 39 35	2978	126 10 15	2959	127 41 19	2940
	α Pegasi	W.	75 53 34	2866	77 26 37	2845	79 0 7	2825	80 34 3	2804
	α Arietis	W.	32 43 30	2704	34 20 5	2681	35 57 10	2659	37 34 45	2638
	Pollux	E.	42 40 41	2657	41 3 3	2640	39 25 2	2624	37 46 39	2607
	JUPITER	E.	55 8 5	2601	53 29 12	2584	51 49 55	2566	50 10 14	2549
	Regulus	E.	79 30 2	2642	77 52 4	2624	76 13 41	2606	74 34 54	2588
26	α Pegasi	W.	88 30 11	2709	90 6 39	2690	91 43 32	2673	93 20 48	2655
	α Arietis	W.	45 49 54	2533	47 30 21	2513	49 11 16	2494	50 52 38	2474
	Pollux	E.	29 29 4	2526	27 48 27	2512	26 7 30	2499	24 26 15	2485
	JUPITER	E.	41 45 43	2461	40 3 35	2443	38 21 2	2426	36 38 4	2409
	Regulus	E.	66 14 49	2498	64 33 33	2480	62 51 51	2462	61 9 44	2443
27	α Pegasi	W.	101 32 45	2577	103 12 11	2564	104 51 55	2551	106 31 57	2540
	α Arietis	W.	59 26 13	2381	61 10 15	2364	62 54 42	2346	64 39 34	2330
	Regulus	E.	52 32 49	2357	50 48 12	2339	49 3 10	2323	47 17 44	2307
	Spica	E.	106 33 54	2359	104 49 21	2342	103 4 23	2326	101 19 1	2309
28	α Arietis	W.	73 29 50	2252	75 17 0	2237	77 4 32	2224	78 52 24	2210
	Aldebaran	W.	42 40 6	2395	44 23 48	2371	46 8 4	2349	47 52 52	2328
	Regulus	E.	38 24 50	2231	36 37 9	2218	34 49 8	2204	33 0 47	2192
	Spica	E.	92 26 24	2234	90 38 47	2220	88 50 49	2206	87 2 31	2194
29	α Arietis	W.	87 56 23	2154	89 46 0	2144	91 35 52	2136	93 25 57	2127
	Aldebaran	W.	56 43 53	2243	58 31 17	2229	60 19 1	2216	62 7 4	2204
	Spica	E.	77 56 29	2137	76 6 27	2128	74 16 11	2119	72 25 41	2111
	SATURN	E.	103 44 32	2187	101 55 45	2176	100 6 42	2167	98 17 25	2159
30	α Arietis	W.	102 39 12	2096	104 30 17	2092	106 21 28	2089	108 12 44	2086
	Aldebaran	W.	71 11 13	2161	73 0 39	2155	74 50 15	2150	76 39 58	2145
	Spica	E.	63 10 23	2079	61 18 52	2075	59 27 15	2072	57 35 32	2069
	SATURN	E.	89 8 7	2126	87 17 47	2122	85 27 21	2118	83 36 50	2115
31	Aldebaran	W.	85 49 46	2137	87 39 49	2138	89 29 50	2139	91 19 49	2141
	Pollux	W.	42 47 53	2074	44 39 32	2074	46 31 11	2075	48 22 48	2077
	Spica	E.	48 16 14	2065	46 24 21	2066	44 32 30	2068	42 40 42	2070
	SATURN	E.	74 23 32	2113	72 32 52	2115	70 42 15	2117	68 51 42	2120
	Antares	E.	94 8 20	2061	92 16 20	2062	90 24 22	2063	88 32 26	2066

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat	1	20 58 37.70	10.192	S. 17 9 6.3	+42.56	16 16.11	68.29	13 46.70	0.334
SUN.	2	21 2 41.89	10.158	16 51 55.8	43.31	16 15.96	68.17	13 54.32	0.300
Mon.	3	21 6 45.28	10.124	16 34 27.7	44.04	16 15.80	68.06	14 1.14	0.267
Tues.	4	21 10 47.86	10.091	16 16 42.1	+44.75	16 15.64	67.95	14 7.15	0.234
Wed.	5	21 14 49.65	10.058	15 58 39.6	45.45	16 15.47	67.83	14 12.36	0.201
Thur.	6	21 18 50.64	10.025	15 40 20.6	46.13	16 15.30	67.72	14 16.78	0.168
Frid.	7	21 22 50.84	9.992	15 21 45.4	+46.79	16 15.12	67.60	14 20.42	0.135
Sat.	8	21 26 50.25	9.959	15 2 54.5	47.44	16 14.94	67.49	14 23.26	0.102
SUN.	9	21 30 48.88	9.927	14 43 48.3	48.07	16 14.76	67.38	14 25.33	0.070
Mon.	10	21 34 46.73	9.895	14 24 27.1	+48.68	16 14.57	67.26	14 26.63	0.038
Tues.	11	21 38 43.81	9.863	14 4 51.6	49.27	16 14.38	67.15	14 27.15	0.006
Wed.	12	21 42 40.13	9.831	13 45 2.0	49.85	16 14.19	67.04	14 26.91	0.026
Thur.	13	21 46 35.69	9.799	13 24 58.8	+50.41	16 14.00	66.94	14 25.92	0.057
Frid.	14	21 50 30.49	9.768	13 4 42.4	50.94	16 13.80	66.83	14 24.18	0.088
Sat.	15	21 54 24.56	9.737	12 44 13.4	51.46	16 13.60	66.73	14 21.69	0.119
SUN.	16	21 58 17.88	9.706	12 23 32.1	+51.97	16 13.40	66.62	14 18.46	0.150
Mon.	17	22 2 10.47	9.676	12 2 39.1	52.45	16 13.20	66.52	14 14.51	0.180
Tues.	18	22 6 2.34	9.647	11 41 34.6	52.91	16 12.99	66.42	14 9.84	0.209
Wed.	19	22 9 53.50	9.618	11 20 19.3	+53.36	16 12.79	66.32	14 4.46	0.238
Thur.	20	22 13 43.97	9.589	10 58 53.4	53.79	16 12.58	66 23	13 58.39	0.267
Frid.	21	22 17 33.75	9.561	10 37 17.5	54.20	16 12.36	66.13	13 51.64	0.295
Sat.	22	22 21 22.87	9.533	10 15 31.8	+54.59	16 12.15	66.04	13 44.22	0.322
SUN.	23	22 25 11.34	9.506	9 53 37.0	54.97	16 11.93	65.95	13 36.16	0.349
Mon.	24	22 28 59.18	9.480	9 31 33.2	55.33	16 11.70	65.86	13 27.46	0.375
Tues.	25	22 32 46.39	9.455	9 9 21.0	+55.68	16 11.48	65.78	13 18.15	0.400
Wed.	26	22 36 33.02	9.431	8 47 0.8	56.01	16 11.25	65.70	13 8.25	0.425
Thur	27	22 40 19.07	9.408	8 24 32.7	56.32	16 11.01	65.62	12 57.77	0.448
Frid.	28	22 44 4.57	9.385	8 1 57.4	56.62	16 10.77	65.54	12 46.75	0.470
Sat.	29	22 47 49.53	9.363	7 39 15.0	56.90	16 10.53	65.46	12 35.19	0.492
SUN.	30	22 51 33.99	9.342	S. 7 16 26.1	+57.17	16 10.29	65.39	12 23.12	0.513

Note.—The mean time of semidiameter passing may be found by subtracting $0^s.19$ from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	20 58 35.36	10.191	S. 17 9 16.1	+42.55	13 46.63	0.335	20 44 48.73
SUN.	2	21 2 39.54	10.158	16 52 6.0	43.29	13 54.26	0.301	20 48 45.28
Mon.	3	21 6 42.92	10.124	16 34 38.0	44.02	14 1.08	0.267	20 52 41.84
Tues.	4	21 10 45.49	10.091	16 16 52.7	+44.73	14 7.09	0.234	20 56 38.40
Wed.	5	21 14 47.27	10.058	15 58 50.5	45.44	14 12.32	0.201	21 0 34.95
Thur.	6	21 18 48.25	10.025	15 40 31.7	46.12	14 16.74	0.168	21 4 31.51
Frid.	7	21 22 48.45	9.992	15 21 56.7	+46.79	14 20.38	0.135	21 8 28.06
Sat.	8	21 26 47.86	9.959	15 3 6.0	47.43	14 23.24	0.102	21 12 24.62
SUN	9	21 30 46.49	9.927	14 43 59.9	48.06	14 25.31	0.070	21 16 21.18
Mon.	10	21 34 44.35	9.895	14 24 38.9	+48.67	14 26.62	0.038	21 20 17.73
Tues.	11	21 38 41.44	9.863	14 5 3.5	49.27	14 27.15	0.006	21 24 14.29
Wed.	12	21 42 37.77	9.831	13 45 14.0	49.84	14 26.92	0.025	21 28 10.84
Thur.	13	21 46 33.33	9.800	13 25 10.9	+50.40	14 25.93	0.057	21 32 7.40
Frid.	14	21 50 28.15	9.769	13 4 54.7	50.94	14 24.19	0.088	21 36 3.96
Sat.	15	21 54 22.23	9.738	12 44 25.8	51.46	14 21.72	0.119	21 40 0.51
SUN.	16	21 58 15.56	9.707	12 23 44.6	+51.96	14 18.50	0.149	21 43 57.06
Mon.	17	22 2 8.17	9.677	12 2 51.6	52.45	14 14.55	0.179	21 47 53.62
Tues.	18	22 6 0.06	9.647	11 41 47.2	52.91	14 9.89	0.209	21 51 50.18
Wed.	19	22 9 51.25	9.618	11 20 31.8	+53.36	14 4.52	0.238	21 55 46.73
Thur.	20	22 13 41.74	9.590	10 59 6.0	53.79	13 58.45	0.267	21 59 43.28
Frid.	21	22 17 31.54	9.562	10 37 30.0	54.20	13 51.70	0.295	22 3 39.84
Sat.	22	22 21 20.69	9.534	10 15 44.4	+54.59	13 44.30	0.322	22 7 36.40
SUN.	23	22 25 9.19	9.507	9 53 49.5	54.97	13 36.24	0.349	22 11 32.95
Mon	24	22 28 57.05	9.482	9 31 45.7	55.33	13 27.55	0.375	22 15 29.50
Tues.	25	22 32 44.30	9.457	9 9 33.4	+55.68	13 18.24	0.400	22 19 26.06
Wed.	26	22 36 30.96	9.432	8 47 13.1	56.01	13 8.34	0.424	22 23 22.61
Thur.	27	22 40 17.04	9.409	8 24 45.0	56.32	12 57.87	0.447	22 27 19.17
Frid.	28	22 44 2.57	9.386	8 2 9.5	56.62	12 46.85	0.470	22 31 15.72
Sat.	29	22 47 47.57	9.365	7 39 27.0	56.91	12 35.29	0.492	22 35 12.28
SUN.	30	22 51 32.06	9.344	S. 7 16 38.0	+57.18	12 23.23	0.513	22 39 8.83

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour
+9^s.8565.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	32	312 11 13.2	11 0.5	152.14	+ 0.01	9.9936745	+27.9	3 14 39.30
2	33	313 12 4.0	11 51.1	152.10	− 0.13	9.9937427	28.9	3 10 43.38
3	34	314 12 53.9	12 40.9	152.06	0.24	9.9938132	29.8	3 6 47.47
4	35	315 13 43.0	13 29.8	152.02	− 0.35	9.9938859	+30.7	3 2 51.56
5	36	316 14 31.0	14 17.8	151.98	0.44	9.9939607	31.6	2 58 55.65
6	37	317 15 18.2	15 4.8	151.94	0.49	9.9940375	32.5	2 54 59.74
7	38	318 16 4.4	15 50.8	151.90	− 0.51	9.9941160	+33.3	2 51 3.83
8	39	319 16 49.6	16 35.9	151.86	0.52	9.9941962	33.9	2 47 7.92
9	40	320 17 33.7	17 19.8	151.82	0.48	9.9942779	34.4	2 43 12.01
10	41	321 18 16.8	18 2.8	151.77	− 0.43	9.9943610	+34.9	2 39 16.10
11	42	322 18 58.7	18 44.6	151.72	0.34	9.9944453	35.4	2 35 20.19
12	43	323 19 39.3	19 25.1	151.66	0.24	9.9945308	35.8	2 31 24.28
13	44	324 20 18.5	20 4.1	151.60	− 0.12	9.9946173	+36.2	2 27 28.38
14	45	325 20 56.3	20 41.7	151.54	0.00	9.9947048	36.7	2 23 32.47
15	46	326 21 32.6	21 17.9	151.48	+ 0.14	9.9947932	37.1	2 19 36.56
16	47	327 22 7.2	21 52.4	151.41	+ 0.25	9.9948827	+37.5	2 15 40.65
17	48	328 22 40.2	22 25.2	151.34	0.36	9.9949732	37.9	2 11 44.74
18	49	329 23 11.4	22 56.3	151.26	0.45	9.9950648	38.4	2 7 48.83
19	50	330 23 40.8	23 25.5	151.18	+ 0.52	9.9951575	+38.9	2 3 52.92
20	51	331 24 8.3	23 52.9	151.10	0.56	9.9952515	39.4	1 59 57.01
21	52	332 24 33.8	24 18.3	151.02	0.57	9.9953467	39.9	1 56 1.10
22	53	333 24 57.3	24 41.7	150.94	+ 0.54	9.9954433	+40.5	1 52 5.19
23	54	334 25 18.9	25 3.1	150.86	0.49	9.9955413	41.2	1 48 9.28
24	55	335 25 38.7	25 22.8	150.78	0.40	9.9956410	41.9	1 44 13.38
25	56	336 25 56.4	25 40.4	150.70	+ 0.31	9.9957424	+42.6	1 40 17.47
26	57	337 26 12.2	25 56.1	150.62	0.19	9.9958455	43.3	1 36 21.56
27	58	338 26 26.2	26 10.0	150.55	+ 0.07	9.9959503	44.0	1 32 25.65
28	59	339 26 38.4	26 22.0	150.47	− 0.08	9.9960569	44.7	1 28 29.74
29	60	340 26 48.7	26 32.2	150.39	0.21	9.9961653	45.5	1 24 33.83
30	61	341 26 57.3	26 40.7	150.32	− 0.33	9.9962753	+46.2	1 20 37.92

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^d.0$.

Diff. for 1 Hour, —$9^s.8296$. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 33.7	16 32.3	60 40.5	−0.28	60 35.2	−0.59	14 35.9	2.09	17.6
2	16 29.8	16 26.6	60 26.3	0.88	60 14.2	1.12	15 25.6	2.07	18.6
3	16 22.6	16 17.9	59 59.5	1.32	59 42.6	1.48	16 15.5	2.10	19.6
4	16 12.9	16 7.5	59 24.1	−1.59	59 4.3	−1.67	17 6.7	2.18	20.6
5	16 2.0	15 56.4	58 44.0	1.71	58 23.3	1.73	18 0.1	2.27	21.6
6	15 50.7	15 45.2	58 2.6	1.71	57 42.3	1.67	18 55.6	2.35	22.6
7	15 39.8	15 34.6	57 22.5	−1.62	57 3.4	−1.56	19 52.5	2.38	23.6
8	15 29.6	15 24.9	56 45.1	1.48	56 27.8	1.41	20 49.3	2.34	24.6
9	15 20.4	15 16.2	56 11.3	1.34	55 55.7	1.26	21 44.2	2.23	25.6
10	15 12.2	15 8.4	55 41.1	−1.18	55 27.3	−1.11	22 36.0	2.08	26.6
11	15 4.9	15 1.7	55 14.4	1.03	55 2.5	0.96	23 24.0	1.92	27.6
12	14 58.7	14 55.9	54 51.4	0.89	54 41.2	0.81	☌		28.6
13	14 53.4	14 51.1	54 31.9	−0.73	54 23.6	−0.65	0 8.5	1.79	29.6
14	14 49.1	14 47.5	54 16.4	0.55	54 10.3	0.45	0 50.2	1.69	0.8
15	14 46.2	14 45.2	54 5.5	0.34	54 2.1	−0.23	1 30.0	1.63	1.8
16	14 44.7	14 44.6	54 0.1	−0.10	53 59.8	+0.05	2 8.9	1.61	2.8
17	14 45.0	14 45.9	54 1.3	+0.20	54 4.7	0.37	2 47.9	1.64	3.8
18	14 47.4	14 49.5	54 10.1	0.54	54 17.7	0.73	3 28.1	1.71	4.8
19	14 52.2	14 55.5	54 27.5	+0.92	54 39.7	+1.11	4 10.5	1.83	5.8
20	14 59.4	15 4.0	54 54.2	1.31	55 11.1	1.50	4 56.2	1.98	6.8
21	15 9.3	15 15.1	55 30.3	1.70	55 51.8	1.88	5 45.9	2.16	7.8
22	15 21.6	15 28.5	56 15.5	+2.05	56 40.9	+2.19	6 39.7	2.32	8.8
23	15 35.9	15 43.6	57 8.0	2.31	57 36.4	2.39	7 37.1	2.44	9.8
24	15 51.5	15 59.5	58 5.4	2.43	58 34.7	2.43	8 36.4	2.48	10.8
25	16 7.4	16 15.0	59 3.7	+2.37	59 31.6	+2.25	9 35.7	2.44	11.8
26	16 22.0	16 28.4	59 57.6	2.06	60 21.1	1.83	10 33.2	2.35	12.8
27	16 34.0	16 38.5	60 41.4	1.53	60 57.9	1.19	11 28.4	2.25	13.8
28	16 41.7	16 43.7	61 9.9	+0.80	61 17.2	+0.40	12 21.3	2.17	14.8
29	16 44.3	16 43.6	61 19.4	−0.02	61 16.7	−0.43	13 13.0	2.14	15.8
30	16 41.5	16 38.2	61 9.2	−0.82	60 57.1	−1.18	14 4.6	2.17	16.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 50 57.89	2.2182	N. 6 33 10.2	17.246
1	10 53 10.89	2.2152	6 15 54.5	17.277
2	10 55 23.71	2.2122	5 58 37.0	17.307
3	10 57 36.35	2.2093	5 41 17.7	17.335
4	10 59 48.82	2.2065	5 23 56.8	17.361
5	11 2 1.13	2.2039	5 6 34.4	17.385
6	11 4 13.29	2.2013	4 49 10.6	17.407
7	11 6 25.29	2.1987	4 31 45.5	17.427
8	11 8 37.14	2.1962	4 14 19.3	17.446
9	11 10 48.84	2.1938	3 56 52.0	17.462
10	11 13 0.40	2.1916	3 39 23.8	17.477
11	11 15 11.83	2.1894	3 21 54.8	17.490
12	11 17 23.13	2.1872	3 4 25.0	17.501
13	11 19 34.30	2.1852	2 46 54.7	17.509
14	11 21 45.36	2.1833	2 29 23.9	17.517
15	11 23 56.30	2.1814	2 11 52.7	17.522
16	11 26 7.13	2.1797	1 54 21.2	17.526
17	11 28 17.86	2.1780	1 36 49.6	17.527
18	11 30 28.49	2.1763	1 19 18.0	17.526
19	11 32 39.02	2.1748	1 1 46.5	17.524
20	11 34 49.47	2.1734	0 44 15.1	17.521
21	11 36 59.83	2.1720	0 26 44.0	17.515
22	11 39 10.11	2.1708	N. 0 9 13.3	17.507
23	11 41 20.32	2.1697	S. 0 8 16.9	17.497

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 43 30.47	2.1686	S. 0 25 46.4	17.486
1	11 45 40.55	2.1675	0 43 15.2	17.473
2	11 47 50.57	2.1666	1 0 43.2	17.459
3	11 50 0.54	2.1657	1 18 10.3	17.443
4	11 52 10.46	2.1650	1 35 36.4	17.425
5	11 54 20.34	2.1643	1 53 1.3	17.405
6	11 56 30.18	2.1637	2 10 25.0	17.383
7	11 58 39.99	2.1632	2 27 47.3	17.360
8	12 0 49.77	2.1628	2 45 8.2	17.336
9	12 2 59.53	2.1625	3 2 27.6	17.309
10	12 5 9.27	2.1622	3 19 45.3	17.280
11	12 7 19.00	2.1621	3 37 1.2	17.249
12	12 9 28.72	2.1620	3 54 15.2	17.217
13	12 11 38.44	2.1621	4 11 27.3	17.184
14	12 13 48.17	2.1622	4 28 37.3	17.149
15	12 15 57.90	2.1623	4 45 45.2	17.112
16	12 18 7.64	2.1626	5 2 50.8	17.074
17	12 20 17.41	2.1630	5 19 54.1	17.035
18	12 22 27.20	2.1634	5 36 55.0	16.993
19	12 24 37.02	2.1639	5 53 53.3	16.949
20	12 26 46.87	2.1644	6 10 48.9	16.904
21	12 28 56.75	2.1650	6 27 41.8	16.857
22	12 31 6.67	2.1658	6 44 31.8	16.809
23	12 33 16.65	2.1667	7 1 18.9	16.760
24	12 35 26.68	2.1677	S. 7 18 3.0	16.709

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 35 26.68	2.1677	S. 7 18 3.0	16.709
1	12 37 36.77	2.1687	7 34 44.0	16.656
2	12 39 46.92	2.1697	7 51 21.7	16.601
3	12 41 57.13	2.1708	8 7 56.1	16.545
4	12 44 7.41	2.1720	8 24 27.1	16.487
5	12 46 17.77	2.1733	8 40 54.6	16.428
6	12 48 28.21	2.1747	8 57 18.5	16.367
7	12 50 38.74	2.1762	9 13 38.7	16.305
8	12 52 49.36	2.1777	9 29 55.1	16.242
9	12 55 0.06	2.1792	9 46 7.7	16.177
10	12 57 10.86	2.1809	10 2 16.3	16.109
11	12 59 21.77	2.1826	10 18 20.8	16.041
12	13 1 32.78	2.1844	10 34 21.2	15.972
13	13 3 43.90	2.1863	10 50 17.4	15.901
14	13 5 55.14	2.1883	11 6 9.3	15.827
15	13 8 6.50	2.1903	11 21 56.7	15.752
16	13 10 17.98	2.1924	11 37 39.6	15.677
17	13 12 29.59	2.1945	11 53 18.0	15.601
18	13 14 41.32	2.1967	12 8 51.7	15.522
19	13 16 53.19	2.1990	12 24 20.7	15.442
20	13 19 5.20	2.2014	12 39 44.8	15.361
21	13 21 17.36	2.2038	12 55 4.0	15.278
22	13 23 29.66	2.2062	13 10 18.2	15.194
23	13 25 42.11	2.2087	S. 13 25 27.3	15.108

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 27 54.71	2.2113	S. 13 40 31.2	15.022
1	13 30 7.47	2.2140	13 55 29.9	14.933
2	13 32 20.39	2.2167	14 10 23.2	14.842
3	13 34 33.47	2.2194	14 25 11.0	14.751
4	13 36 46.71	2.2222	14 39 53.3	14.659
5	13 39 0.13	2.2251	14 54 30.1	14.566
6	13 41 13.72	2.2279	15 9 1.2	14.470
7	13 43 27.48	2.2308	15 23 26.5	14.373
8	13 45 41.42	2.2338	15 37 46.0	14.276
9	13 47 55.54	2.2369	15 51 59.6	14.177
10	13 50 9.85	2.2400	16 6 7.2	14.076
11	13 52 24.34	2.2431	16 20 8.7	13.974
12	13 54 39.02	2.2463	16 34 4.1	13.871
13	13 56 53.89	2.2495	16 47 53.2	13.766
14	13 59 8.96	2.2527	17 1 36.0	13.661
15	14 1 24.22	2.2560	17 15 12.5	13.554
16	14 3 39.68	2.2593	17 28 42.5	13.446
17	14 5 55.34	2.2627	17 42 6.0	13.336
18	14 8 11.20	2.2660	17 55 22.8	13.224
19	14 10 27.26	2.2694	18 8 32.9	13.112
20	14 12 43.53	2.2729	18 21 36.3	12.999
21	14 15 0.01	2.2764	18 34 32.8	12.884
22	14 17 16.70	2.2799	18 47 22.4	12.769
23	14 19 33.60	2.2833	19 0 5.1	12.652
24	14 21 50.70	2.2868	S. 19 12 40.7	12.534

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Right scension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
m s	s	° ′ ″	″
21 50.70	2.2868	S.19 12 40.7	12.534
24 8.02	2.2904	19 25 9.2	12.415
26 25.55	2.2940	19 37 30.5	12.294
28 43.30	2.2976	19 49 44.5	12.172
31 1.26	2.3012	20 1 51.1	12.049
33 19.44	2.3047	20 13 50.4	11.926
35 37.83	2.3083	20 25 42.2	11.800
37 56.44	2.3120	20 37 26.4	11.673
40 15.27	2.3157	20 49 3.0	11.546
42 34.32	2.3192	21 0 32.0	11.418
44 53.58	2.3228	21 11 53.2	11.288
47 13.06	2.3265	21 23 6.6	11.157
49 32.76	2.3301	21 34 12.1	11.025
51 52.67	2.3337	21 45 9.6	10.892
54 12.80	2.3373	21 55 59.2	10.759
56 33.15	2.3409	22 6 40.7	10.624
58 53.71	2.3444	22 17 14.1	10.488
1 14.48	2.3480	22 27 39.3	10.351
3 35.47	2.3516	22 37 56.2	10.212
5 56.67	2.3551	22 48 4.8	10.073
8 18.08	2.3585	22 58 5.0	9.933
10 39.69	2.3619	23 7 56.8	9.792
13 1.51	2.3654	23 17 40.1	9.651
15 23.54	2.3688	S.23 27 14.9	9.507

THURSDAY 6.

Right scension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
17 45.77	2.3722	S.23 36 41.0	9.363
20 8.20	2.3755	23 45 58.5	9.219
22 30.83	2.3788	23 55 7.3	9.073
24 53.66	2.3821	24 4 7.3	8.927
27 16.68	2.3853	24 12 58.5	8.780
29 39.90	2.3886	24 21 40.9	8.632
32 3.31	2.3917	24 30 14.4	8.483
34 26.90	2.3948	24 38 38.9	8.333
36 50.68	2.3978	24 46 54.4	8.182
39 14.64	2.4008	24 55 0.8	8.031
41 38.77	2.4037	25 2 58.1	7.879
44 3.08	2.4066	25 10 46.3	7.726
46 27.56	2.4093	25 18 25.3	7.572
48 52.20	2.4121	25 25 55.0	7.418
51 17.01	2.4148	25 33 15.5	7.264
53 41.98	2.4174	25 40 26.7	7.108
56 7.10	2.4199	25 47 28.5	6.952
58 32.37	2.4223	25 54 20.9	6.795
0 57.78	2.4247	26 1 3.9	6.637
3 23.33	2.4270	26 7 37.4	6.479
5 49.02	2.4293	26 14 1.4	6.321
8 14.85	2.4316	26 20 15.9	6.162
10 40.81	2.4336	26 26 20.8	6.002
13 6.88	2.4355	26 32 16.1	5.842
15 33.07	2.4374	S.26 38 1.8	5.681

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 15 33.07	2.4374	S.26 38 1.8	5.681
1	16 17 59.37	2.4393	26 43 37.8	5.519
2	16 20 25.78	2.4411	26 49 4.1	5.358
3	16 22 52.30	2.4427	26 54 20.8	5.196
4	16 25 18.91	2.4442	26 59 27.7	5.033
5	16 27 45.60	2.4457	27 4 24.8	4.871
6	16 30 12.38	2.4470	27 9 12.2	4.708
7	16 32 39.24	2.4482	27 13 49.8	4.545
8	16 35 6.17	2.4494	27 18 17.6	4.381
9	16 37 33.17	2.4505	27 22 35.5	4.217
10	16 40 0.23	2.4514	27 26 43.6	4.052
11	16 42 27.34	2.4522	27 30 41.8	3.887
12	16 44 54.50	2.4530	27 34 30.1	3.722
13	16 47 21.70	2.4537	27 38 8.5	3.557
14	16 49 48.94	2.4542	27 41 37.0	3.393
15	16 52 16.21	2.4547	27 44 55.7	3.228
16	16 54 43.50	2.4550	27 48 4.4	3.062
17	16 57 10.81	2.4552	27 51 3.2	2.897
18	16 59 38.13	2.4553	27 53 52.1	2.732
19	17 2 5.45	2.4552	27 56 31.1	2.567
20	17 4 32.76	2.4552	27 59 0.1	2.401
21	17 7 0.07	2.4550	28 1 19.2	2.236
22	17 9 27.36	2.4546	28 3 28.4	2.070
23	17 11 54.62	2.4541	S.28 5 27.6	1.904

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 14 21.85	2.4535	S.28 7 16.9	1.739
1	17 16 49.04	2.4528	28 8 56.3	1.574
2	17 19 16.19	2.4521	28 10 25.8	1.409
3	17 21 43.29	2.4512	28 11 45.4	1.244
4	17 24 10.33	2.4501	28 12 55.1	1.079
5	17 26 37.30	2.4489	28 13 54.9	0.915
6	17 29 4.20	2.4477	28 14 44.9	0.751
7	17 31 31.02	2.4463	28 15 25.0	0.587
8	17 33 57.76	2.4448	28 15 55.3	0.423
9	17 36 24.40	2.4432	28 16 15.8	0.260
10	17 38 50.94	2.4415	28 16 26.5	− 0.097
11	17 41 17.38	2.4397	28 16 27.4	+ 0.066
12	17 43 43.70	2.4377	28 16 18.6	0.228
13	17 46 9.90	2.4357	28 16 0.0	0.391
14	17 48 35.98	2.4335	28 15 31.7	0.552
15	17 51 1.92	2.4312	28 14 53.8	0.713
16	17 53 27.72	2.4288	28 14 6.2	0.873
17	17 55 53.37	2.4263	28 13 9.0	1.033
18	17 58 18.87	2.4237	28 12 2.2	1.193
19	18 0 44.21	2.4209	28 10 45.8	1.352
20	18 3 9.38	2.4181	28 9 19.9	1.511
21	18 5 34.38	2.4152	28 7 44.5	1.669
22	18 7 59.20	2.4121	28 5 59.6	1.826
23	18 10 23.83	2.4090	28 4 5.4	1.982
24	18 12 48.28	2.4058	S.28 2 1.8	2.138

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 9.					TUESDAY 11.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 12 48.28	2.4058	S.28 2 1.8	2.138	0	20 3 1.83	2.1658	S.23 35 50.4	8.564
1	18 15 12.53	2.4024	27 59 48.9	2.293	1	20 5 11.60	2.1599	23 27 13.3	8.672
2	18 17 36.57	2.3989	27 57 26.6	2.449	2	20 7 21.02	2.1540	23 18 29.8	8.778
3	18 20 0.40	2.3953	27 54 55.0	2.603	3	20 9 30.08	2.1481	23 9 40.0	8.883
4	18 22 24.01	2.3917	27 52 14.2	2.756	4	20 11 38.79	2.1422	23 0 43.9	8.987
5	18 24 47.41	2.3881	27 49 24.3	2.909	5	20 13 47.14	2.1362	22 51 41.6	9.089
6	18 27 10.58	2.3842	27 46 25.2	3.061	6	20 15 55.13	2.1302	22 42 33.2	9.191
7	18 29 33.51	2.3803	27 43 17.0	3.212	7	20 18 2.77	2.1243	22 33 18.7	9.291
8	18 31 56.21	2.3763	27 39 59.8	3.362	8	20 20 10.05	2.1184	22 23 58.3	9.389
9	18 34 18.67	2.3722	27 36 33.6	3.511	9	20 22 16.98	2.1126	22 14 32.0	9.487
10	18 36 40.88	2.3681	27 32 58.5	3.659	10	20 24 23.56	2.1067	22 4 59.8	9.585
11	18 39 2.84	2.3638	27 29 14.5	3.807	11	20 26 29.78	2.1008	21 55 21.8	9.680
12	18 41 24.54	2.3595	27 25 21.6	3.955	12	20 28 35.65	2.0949	21 45 38.2	9.774
13	18 43 45.98	2.3551	27 21 19.9	4.101	13	20 30 41.17	2.0891	21 35 48.9	9.868
14	18 46 7.15	2.3505	27 17 9.5	4.245	14	20 32 46.34	2.0832	21 25 54.0	9.960
15	18 48 28.04	2.3459	27 12 50.5	4.388	15	20 34 51.15	2.0773	21 15 53.7	10.050
16	18 50 48.66	2.3413	27 8 22.9	4.532	16	20 36 55.61	2.0715	21 5 48.0	10.140
17	18 53 9.00	2.3366	27 3 46.7	4.675	17	20 38 59.73	2.0658	20 55 36.9	10.229
18	18 55 29.05	2.3318	26 59 1.9	4.817	18	20 41 3.51	2.0601	20 45 20.5	10.317
19	18 57 48.81	2.3269	26 54 8.7	4.957	19	20 43 6.94	2.0543	20 34 58.9	10.403
20	19 0 8.28	2.3221	26 49 7.1	5.096	20	20 45 10.03	2.0486	20 24 32.2	10.488
21	19 2 27.46	2.3171	26 43 57.2	5.234	21	20 47 12.77	2.0428	20 14 0.4	10.572
22	19 4 46.33	2.3119	26 38 39.0	5.372	22	20 49 15.17	2.0372	20 3 23.6	10.655
23	19 7 4.89	2.3068	S.26 33 12.6	5.508	23	20 51 17.24	2.0316	S.19 52 41.8	10.737
MONDAY 10.					WEDNESDAY 12.				
0	19 9 23.15	2.3017	S.26 27 38.0	5.644	0	20 53 18.97	2.0260	S.19 41 55.2	10.817
1	19 11 41.10	2.2965	26 21 55.3	5.778	1	20 55 20.36	2.0204	19 31 3.8	10.896
2	19 13 58.73	2.2912	26 16 4.6	5.911	2	20 57 21.42	2.0149	19 20 7.7	10.974
3	19 16 16.04	2.2858	26 10 6.0	6.043	3	20 59 22.15	2.0094	19 9 6.9	11.052
4	19 18 33.03	2.2804	26 3 59.5	6.174	4	21 1 22.55	2.0040	18 58 1.5	11.128
5	19 20 49.69	2.2750	25 57 45.1	6.305	5	21 3 22.63	1.9986	18 46 51.6	11.203
6	19 23 6.03	2.2696	25 51 22.9	6.434	6	21 5 22.38	1.9932	18 35 37.2	11.277
7	19 25 22.04	2.2640	25 44 53.0	6.562	7	21 7 21.81	1.9878	18 24 18.4	11.349
8	19 27 37.71	2.2584	25 38 15.5	6.689	8	21 9 20.92	1.9825	18 12 55.3	11.420
9	19 29 53.05	2.2528	25 31 30.4	6.815	9	21 11 19.71	1.9773	18 1 28.0	11.490
10	19 32 8.05	2.2472	25 24 37.7	6.940	10	21 13 18.19	1.9721	17 49 56.5	11.560
11	19 34 22.72	2.2416	25 17 37.6	7.062	11	21 15 16.36	1.9669	17 38 20.8	11.628
12	19 36 37.05	2.2359	25 10 30.2	7.184	12	21 17 14.21	1.9617	17 26 41.1	11.695
13	19 38 51.03	2.2302	25 3 15.5	7.306	13	21 19 11.76	1.9566	17 14 57.4	11.762
14	19 41 4.67	2.2244	24 55 53.5	7.427	14	21 21 9.00	1.9515	17 3 9.7	11.827
15	19 43 17.96	2.2186	24 48 24.3	7.546	15	21 23 5.94	1.9465	16 51 18.2	11.890
16	19 45 30.90	2.2128	24 40 48.0	7.663	16	21 25 2.58	1.9416	16 39 22.9	11.953
17	19 47 43.50	2.2071	24 33 4.7	7.780	17	21 26 58.93	1.9367	16 27 23.8	12.015
18	19 49 55.75	2.2012	24 25 14.4	7.896	18	21 28 54.98	1.9318	16 15 21.1	12.075
19	19 52 7.65	2.1953	24 17 17.2	8.010	19	21 30 50.74	1.9270	16 3 14.8	12.135
20	19 54 19.19	2.1894	24 9 13.2	8.122	20	21 32 46.22	1.9222	15 51 4.9	12.194
21	19 56 30.38	2.1836	24 1 2.5	8.234	21	21 34 41.41	1.9175	15 38 51.5	12.252
22	19 58 41.22	2.1777	23 52 45.1	8.346	22	21 36 36.32	1.9128	15 26 34.7	12.308
23	20 0 51.70	2.1717	23 44 21.0	8.456	23	21 38 30.95	1.9082	15 14 14.5	12.363
24	20 3 1.83	2.1658	S.23 35 50.4	8.564	24	21 40 25.30	1.9036	S.15 1 51.1	12.41

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right scension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 13.					SATURDAY 15.			
m s	s	° ′ ″	″		h m s	s	° ′ ″	″
40 25.30	1.9036	S. 15 1 51.1	12.418	0	23 7 38.93	1.7548	S. 4 21 2.1	13.942
42 19.38	1.8992	14 49 24.4	12.472	1	23 9 24.17	1.7532	4 7 5.2	13.953
44 13.20	1.8947	14 36 54.5	12.524	2	23 11 9.32	1.7517	3 53 7.7	13.964
46 6.75	1.8902	14 24 21.5	12.576	3	23 12 54.38	1.7503	3 39 9.5	13.974
48 0.03	1.8859	14 11 45.4	12.627	4	23 14 39.36	1.7491	3 25 10.8	13.983
49 53.06	1.8817	13 59 6.3	12.676	5	23 16 24.27	1.7478	3 11 11.6	13.991
51 45.83	1.8774	13 46 24.3	12.724	6	23 18 9.10	1.7466	2 57 11.9	13.998
53 38.35	1.8732	13 33 39.4	12.772	7	23 19 53.86	1.7455	2 43 11.8	14.004
55 30.62	1.8691	13 20 51.7	12.818	8	23 21 38.56	1.7444	2 29 11.4	14.010
57 22.64	1.8650	13 8 1.2	12.864	9	23 23 23.19	1.7433	2 15 10.6	14.015
59 14.42	1.8610	12 55 8.0	12.908	10	23 25 7.76	1.7425	2 1 9.6	14.019
1 5.96	1.8571	12 42 12.2	12.951	11	23 26 52.29	1.7417	1 47 8.3	14.023
2 57.27	1.8532	12 29 13.8	12.994	12	23 28 36.77	1.7409	1 33 6.8	14.027
4 48.35	1.8494	12 16 12.9	13.037	13	23 30 21.20	1.7402	1 19 5.1	14.028
6 39.20	1.8456	12 3 9.4	13.078	14	23 32 5.59	1.7395	1 5 3.4	14.029
8 29.82	1.8418	11 50 3.5	13.117	15	23 33 49.94	1.7388	0 51 1.6	14.030
10 20.22	1.8382	11 36 55.3	13.156	16	23 35 34.25	1.7383	0 36 59.8	14.030
12 10.41	1.8346	11 23 44.8	13.194	17	23 37 18.54	1.7379	0 22 58.0	14.029
14 0.38	1.8311	11 10 32.0	13.232	18	23 39 2.80	1.7375	S. 0 8 56.3	14.027
15 50.14	1.8277	10 57 17.0	13.268	19	23 40 47.04	1.7372	N. 0 5 5.3	14.025
17 39.70	1.8242	10 43 59.9	13.303	20	23 42 31.27	1.7370	0 19 6.7	14.022
19 29.05	1.8208	10 30 40.7	13.338	21	23 44 15.48	1.7368	0 33 8.0	14.019
21 18.20	1.8176	10 17 19.4	13.371	22	23 45 59.68	1.7367	0 47 9.0	14.014
23 7.16	1.8144	S. 10 3 56.2	13.403	23	23 47 43.88	1.7367	N. 1 1 9.7	14.008
FRIDAY 14.					SUNDAY 16.			
24 55.93	1.8113	S. 9 50 31.1	13.434	0	23 49 28.09	1.7368	N. 1 15 10.0	14.002
26 44.51	1.8082	9 37 4.1	13.466	1	23 51 12.30	1.7368	1 29 10.0	13.996
28 32.91	1.8051	9 23 35.2	13.496	2	23 52 56.51	1.7369	1 43 9.6	13.989
30 21.12	1.8021	9 10 4.6	13.524	3	23 54 40.73	1.7372	1 57 8.7	13.981
32 9.16	1.7992	8 56 32.3	13.553	4	23 56 24.97	1.7375	2 11 7.3	13.972
33 57.03	1.7964	8 42 58.3	13.581	5	23 58 9.23	1.7379	2 25 5.4	13.963
35 44.73	1.7936	8 29 22.6	13.608	6	23 59 53.52	1.7383	2 39 2.9	13.953
37 32.26	1.7908	8 15 45.4	13.633	7	0 1 37.83	1.7388	2 52 59.7	13.942
39 19.63	1.7882	8 2 6.7	13.658	8	0 3 22.18	1.7394	3 6 55.9	13.931
41 6.85	1.7857	7 48 26.5	13.682	9	0 5 6.56	1.7400	3 20 51.4	13.918
42 53.91	1.7832	7 34 44.9	13.704	10	0 6 50.98	1.7408	3 34 46.1	13.905
44 40.83	1.7807	7 21 2.0	13.726	11	0 8 35.45	1.7416	3 48 40.0	13.892
46 27.60	1.7782	7 7 17.8	13.747	12	0 10 19.97	1.7424	4 2 33.1	13.877
48 14.22	1.7759	6 53 32.3	13.768	13	0 12 4.54	1.7433	4 16 25.3	13.862
50 0.71	1.7737	6 39 45.6	13.788	14	0 13 49.17	1.7443	4 30 16.5	13.846
51 47.07	1.7716	6 25 57.7	13.807	15	0 15 33.86	1.7453	4 44 6.8	13.829
53 33.30	1.7694	6 12 8.7	13.826	16	0 17 18.61	1.7465	4 57 56.0	13.812
55 19.40	1.7673	5 58 18.6	13.843	17	0 19 3.44	1.7477	5 11 44.2	13.794
57 5.38	1.7653	5 44 27.5	13.860	18	0 20 48.34	1.7489	5 25 31.3	13.775
58 51.24	1.7634	5 30 35.4	13.876	19	0 22 33.31	1.7502	5 39 17.2	13.756
0 36.99	1.7616	5 16 42.4	13.891	20	0 24 18.37	1.7517	5 53 2.0	13.737
2 22.63	1.7598	5 2 48.5	13.905	21	0 26 3.52	1.7532	6 6 45.6	13.716
4 8.16	1.7580	4 48 53.8	13.918	22	0 27 48.76	1.7547	6 20 27.9	13.693
5 53.59	1.7564	4 34 58.3	13.931	23	0 29 34.09	1.7564	6 34 8.8	13.671
7 38.93	1.7548	S. 4 21 2.1	13.942	24	0 31 19.52	1.7581	N. 6 47 48.4	13.648

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 17.			
	h m s	s	° ′ ″	″
0	0 31 19.52	1.7581	N. 6 47 48.4	13.648
1	0 33 5.06	1.7598	7 1 26.6	13.625
2	0 34 50.70	1.7616	7 15 3.4	13.601
3	0 36 36.45	1.7634	7 28 38.7	13.575
4	0 38 22.31	1.7654	7 42 12.4	13.549
5	0 40 8.30	1.7675	7 55 44.6	13.523
6	0 41 54.41	1.7696	8 9 15.2	13.496
7	0 43 40.65	1.7717	8 22 44.1	13.468
8	0 45 27.02	1.7740	8 36 11.3	13.439
9	0 47 13.53	1.7763	8 49 36.8	13.410
10	0 49 0.18	1.7787	9 3 0.5	13.379
11	0 50 46.97	1.7811	9 16 22.3	13.348
12	0 52 33.91	1.7837	9 29 42.2	13.316
13	0 54 21.01	1.7862	9 43 0.2	13.283
14	0 56 8.26	1.7888	9 56 16.2	13.251
15	0 57 55.67	1.7915	10 9 30.3	13.217
16	0 59 43.24	1.7943	10 22 42.3	13.182
17	1 1 30.99	1.7972	10 35 52.1	13.146
18	1 3 18.91	1.8002	10 48 59.8	13.110
19	1 5 7.01	1.8032	11 2 5.3	13.073
20	1 6 55.29	1.8062	11 15 8.6	13.036
21	1 8 43.75	1.8093	11 28 9.6	12.997
22	1 10 32.40	1.8125	11 41 8.3	12.957
23	1 12 21.25	1.8157	N.11 54 4.5	12.917
	TUESDAY 18.			
0	1 14 10.29	1.8190	N.12 6 58.3	12.876
1	1 15 59.53	1.8224	12 19 49.6	12.834
2	1 17 48.98	1.8260	12 32 38.4	12.792
3	1 19 38.65	1.8296	12 45 24.7	12.750
4	1 21 28.53	1.8332	12 58 8.4	12.705
5	1 23 18.63	1.8368	13 10 49.3	12.659
6	1 25 8.94	1.8404	13 23 27.5	12.613
7	1 26 59.48	1.8442	13 36 2.9	12.567
8	1 28 50.25	1.8482	13 48 35.6	12.521
9	1 30 41.26	1.8522	14 1 5.4	12.472
10	1 32 32.51	1.8562	14 13 32.2	12.423
11	1 34 24.00	1.8602	14 25 56.1	12.373
12	1 36 15.73	1.8643	14 38 17.0	12.322
13	1 38 7.71	1.8685	14 50 34.8	12.271
14	1 39 59.95	1.8727	15 2 49.5	12.218
15	1 41 52.44	1.8770	15 15 1.0	12.165
16	1 43 45.19	1.8814	15 27 9.3	12.111
17	1 45 38.21	1.8860	15 39 14.3	12.056
18	1 47 31.51	1.8906	15 51 16.0	12.000
19	1 49 25.08	1.8951	16 3 14.3	11.943
20	1 51 18.92	1.8997	16 15 9.2	11.885
21	1 53 13.04	1.9044	16 27 0.5	11.826
22	1 55 7.45	1.9091	16 38 48.3	11.767
23	1 57 2.14	1.9139	16 50 32.6	11.707
24	1 58 57.12	1.9188	N.17 2 13.2	11.646

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 19.			
	h m s	s	° ′ ″	″
0	1 58 57.12	1.9188	N.17 2 13.2	11.646
1	2 0 52.40	1.9238	17 13 50.1	11.583
2	2 2 47.98	1.9288	17 25 23.2	11.520
3	2 4 43.86	1.9339	17 36 52.5	11.456
4	2 6 40.05	1.9390	17 48 17.9	11.390
5	2 8 36.54	1.9441	17 59 39.3	11.324
6	2 10 33.34	1.9493	18 10 56.8	11.257
7	2 12 30.46	1.9547	18 22 10.2	11.189
8	2 14 27.90	1.9601	18 33 19.5	11.120
9	2 16 25.67	1.9655	18 44 24.6	11.050
10	2 18 23.76	1.9709	18 55 25.5	10.979
11	2 20 22.18	1.9764	19 6 22.1	10.907
12	2 22 20.93	1.9820	19 17 14.4	10.835
13	2 24 20.02	1.9876	19 28 2.3	10.761
14	2 26 19.45	1.9932	19 38 45.7	10.685
15	2 28 19.21	1.9989	19 49 24.5	10.609
16	2 30 19.32	2.0047	19 59 58.8	10.532
17	2 32 19.78	2.0106	20 10 28.4	10.454
18	2 34 20.59	2.0164	20 20 53.3	10.375
19	2 36 21.75	2.0223	20 31 13.4	10.295
20	2 38 23.27	2.0283	20 41 28.7	10.214
21	2 40 25.15	2.0343	20 51 39.1	10.132
22	2 42 27.39	2.0404	21 1 44.5	10.048
23	2 44 30.00	2.0465	N.21 11 44.9	9.963
	THURSDAY 20.			
0	2 46 32.97	2.0526	N.21 21 40.1	9.878
1	2 48 36.31	2.0588	21 31 30.2	9.792
2	2 50 40.02	2.0650	21 41 15.1	9.703
3	2 52 44.11	2.0712	21 50 54.6	9.614
4	2 54 48.57	2.0775	22 0 28.8	9.525
5	2 56 53.41	2.0838	22 9 57.6	9.433
6	2 58 58.63	2.0902	22 19 20.8	9.341
7	3 1 4.23	2.0966	22 28 38.5	9.247
8	3 3 10.22	2.1030	22 37 50.5	9.152
9	3 5 16.59	2.1094	22 46 56.8	9.057
10	3 7 23.35	2.1159	22 55 57.3	8.960
11	3 9 30.50	2.1223	23 4 52.0	8.862
12	3 11 38.03	2.1289	23 13 40.8	8.763
13	3 13 45.96	2.1354	23 22 23.6	8.662
14	3 15 54.28	2.1420	23 31 0.3	8.561
15	3 18 3.00	2.1486	23 39 30.9	8.458
16	3 20 12.11	2.1552	23 47 55.3	8.354
17	3 22 21.62	2.1618	23 56 13.4	8.249
18	3 24 31.53	2.1685	24 4 25.2	8.143
19	3 26 41.84	2.1752	24 12 30.6	8.036
20	3 28 52.55	2.1817	24 20 29.5	7.927
21	3 31 3.65	2.1883	24 28 21.8	7.817
22	3 33 15.15	2.1950	24 36 7.5	7.706
23	3 35 27.05	2.2018	24 43 46.5	7.593
24	3 37 39.36	2.2085	N.24 51 18.7	7.480

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right scension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 21.					SUNDAY 23.			
m s	s	° ′ ″	″		h m s	s	° ′ ″	″
37 39.36	2.2085	N.24 51 18.7	7.480	0	5 30 50.87	2.4863	N.28 16 30.7	0.633
39 52.07	2.2151	24 58 44.1	7.365	1	5 33 20.17	2.4902	28 17 3.6	0.464
42 5.17	2.2218	25 6 2.5	7.249	2	5 35 49.69	2.4939	28 17 26.4	0.296
44 18.67	2.2284	25 13 13.9	7.132	3	5 38 19.44	2.4976	28 17 39.1	+ 0.126
46 32.58	2.2351	25 20 18.3	7.013	4	5 40 49.41	2.5013	28 17 41.5	− 0.046
48 46.89	2.2417	25 27 15.5	6.893	5	5 43 19.59	2.5048	28 17 33.6	0.217
51 1.59	2.2483	25 34 5.5	6.772	6	5 45 49.98	2.5081	28 17 15.5	0.389
53 16.69	2.2550	25 40 48.2	6.650	7	5 48 20.56	2.5113	28 16 47.0	0.562
55 32.19	2.2617	25 47 23.5	6.527	8	5 50 51.33	2.5144	28 16 8.1	0.734
57 48.09	2.2683	25 53 51.4	6.403	9	5 53 22.29	2.5174	28 15 18.9	0.907
0 4.38	2.2748	26 0 11.8	6.277	10	5 55 53.42	2.5202	28 14 19.2	1.082
2 21.07	2.2814	26 6 24.6	6.149	11	5 58 24.71	2.5228	28 13 9.0	1.258
4 38.15	2.2879	26 12 29.7	6.021	12	6 0 56.16	2.5254	28 11 48.2	1.434
6 55.62	2.2944	26 18 27.1	5.892	13	6 3 27.76	2.5279	28 10 16.9	1.610
9 13.48	2.3009	26 24 16.7	5.760	14	6 5 59.51	2.5303	28 8 35.0	1.787
11 31.73	2.3073	26 29 58.3	5.628	15	6 8 31.40	2.5326	28 6 42.5	1.964
13 50.36	2.3138	26 35 32.0	5.495	16	6 11 3.42	2.5347	28 4 39.3	2.142
16 9.38	2.3202	26 40 57.7	5.360	17	6 13 35.56	2.5366	28 2 25.5	2.319
18 28.78	2.3265	26 46 15.2	5.224	18	6 16 7.81	2.5384	28 0 1.0	2.497
20 48.56	2.3327	26 51 24.6	5.088	19	6 18 40.17	2.5402	27 57 25.8	2.676
23 8.71	2.3390	26 56 25.8	4.950	20	6 21 12.63	2.5417	27 54 39.9	2.855
25 29.24	2.3452	27 1 18.6	4.810	21	6 23 45.17	2.5430	27 51 43.2	3.034
27 50.14	2.3514	27 6 3.0	4.670	22	6 26 17.79	2.5443	27 48 35.8	3.213
30 11.41	2.3576	N.27 10 39.0	4.528	23	6 28 50.49	2.5456	N.27 45 17.6	3.393
SATURDAY 22.					MONDAY 24.			
32 33.05	2.3637	N.27 15 6.4	4.385	0	6 31 23.26	2.5466	N.27 41 48.6	3.573
34 55.05	2.3696	27 19 25.2	4.242	1	6 33 56.08	2.5474	27 38 8.8	3.753
37 17.40	2.3755	27 23 35.4	4.097	2	6 36 28.95	2.5482	27 34 18.2	3.933
39 40.11	2.3814	27 27 36.8	3.950	3	6 39 1.87	2.5489	27 30 16.8	4.113
42 3.17	2.3872	27 31 29.4	3.802	4	6 41 34.82	2.5494	27 26 4.6	4.294
44 26.57	2.3929	27 35 13.1	3.654	5	6 44 7.80	2.5498	27 21 41.5	4.474
46 50.32	2.3986	27 38 47.9	3.505	6	6 46 40.80	2.5501	27 17 7.7	4.653
49 14.41	2.4042	27 42 13.7	3.353	7	6 49 13.81	2.5502	27 12 23.1	4.834
51 38.83	2.4097	27 45 30.3	3.201	8	6 51 46.82	2.5502	27 7 27.6	5.015
54 3.58	2.4152	27 48 37.8	3.048	9	6 54 19.83	2.5501	27 2 21.3	5.195
56 28.65	2.4206	27 51 36.1	2.894	10	6 56 52.83	2.5498	26 57 4.2	5.375
58 54.05	2.4259	27 54 25.1	2.739	11	6 59 25.81	2.5494	26 51 36.3	5.554
1 19.76	2.4311	27 57 4.8	2.583	12	7 1 58.76	2.5488	26 45 57.7	5.733
3 45.78	2.4362	27 59 35.1	2.426	13	7 4 31.67	2.5482	26 40 8.3	5.913
6 12.10	2.4412	28 1 55.9	2.267	14	7 7 4.55	2.5476	26 34 8.1	6.092
8 38.73	2.4462	28 4 7.2	2.108	15	7 9 37.38	2.5468	26 27 57.2	6.271
11 5.65	2.4510	28 6 8.9	1.948	16	7 12 10.16	2.5458	26 21 35.6	6.449
13 32.85	2.4558	28 8 1.0	1.787	17	7 14 42.87	2.5446	26 15 3.3	6.627
16 0.34	2.4605	28 9 43.3	1.624	18	7 17 15.51	2.5434	26 8 20.4	6.804
18 28.11	2.4650	28 11 15.9	1.461	19	7 19 48.08	2.5421	26 1 26.8	6.981
20 56.14	2.4694	28 12 38.7	1.298	20	7 22 20.56	2.5406	25 54 22.6	7.157
23 24.44	2.4738	28 13 51.6	1.133	21	7 24 52.95	2.5390	25 47 7.9	7.333
25 53.00	2.4781	28 14 54.6	0.968	22	7 27 25.24	2.5374	25 39 42.6	7.509
28 21.81	2.4822	28 15 47.7	0.801	23	7 29 57.44	2.5357	25 32 6.8	7.684
30 50.87	2.4863	N.28 16 30.7	0.633	24	7 32 29.53	2.5338	N.25 24 20.5	7.858

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 25					**THURSDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 32 29.53	2.5338	N.25 24 20.5	7.858	0	9 30 36.24	2.3721	N.16 5 13.1	14.931
1	7 35 1.50	2.5318	25 16 23.8	8.032	1	9 32 58.45	2.3683	15 50 13.9	15.042
2	7 37 33.35	2.5298	25 8 16.7	8.205	2	9 35 20.43	2.3645	15 35 8.1	15.150
3	7 40 5.08	2.5277	24 59 59.2	8.377	3	9 37 42.19	2.3607	15 19 55.9	15.256
4	7 42 36.68	2.5255	24 51 31.4	8.549	4	9 40 3.72	2.3570	15 4 37.4	15.361
5	7 45 8.14	2.5231	24 42 53.3	8.720	5	9 42 25.03	2.3532	14 49 12.6	15.464
6	7 47 39.45	2.5206	24 34 5.0	8.890	6	9 44 46.11	2.3495	14 33 41.7	15.565
7	7 50 10.61	2.5181	24 25 6.5	9.059	7	9 47 6.97	2.3459	14 18 4.8	15.664
8	7 52 41.62	2.5156	24 15 57.9	9.227	8	9 49 27.62	2.3423	14 2 22.0	15.762
9	7 55 12.48	2.5129	24 6 39.3	9.393	9	9 51 48.05	2.3387	13 46 33.4	15.857
10	7 57 43.17	2.5101	23 57 10.7	9.560	10	9 54 8.27	2.3352	13 30 39.2	15.950
11	8 0 13.69	2.5072	23 47 32.1	9.726	11	9 56 28.27	2.3316	13 14 39.4	16.042
12	8 2 44.04	2.5043	23 37 43.6	9.891	12	9 58 48.06	2.3282	12 58 34.1	16.132
13	8 5 14.21	2.5013	23 27 45.2	10.054	13	10 1 7.65	2.3247	12 42 23.5	16.220
14	8 7 44.20	2.4983	23 17 37.1	10.216	14	10 3 27.03	2.3213	12 26 7.7	16.305
15	8 10 14.01	2.4952	23 7 19.3	10.377	15	10 5 46.21	2.3180	12 9 46.9	16.388
16	8 12 43.63	2.4920	22 56 51.8	10.537	16	10 8 5.19	2.3147	11 53 21.1	16.470
17	8 15 13.05	2.4887	22 46 14.8	10.696	17	10 10 23.98	2.3115	11 36 50.5	16.550
18	8 17 42.27	2.4853	22 35 28.3	10.854	18	10 12 42.57	2.3083	11 20 15.1	16.628
19	8 20 11.29	2.4820	22 24 32.3	11.012	19	10 15 0.97	2.3052	11 3 35.1	16.703
20	8 22 40.11	2.4787	22 13 26.9	11.167	20	10 17 19.19	2.3022	10 46 50.7	16.777
21	8 25 8.73	2.4752	22 2 12.3	11.320	21	10 19 37.23	2.2992	10 30 1.9	16.848
22	8 27 37.14	2.4717	21 50 48.5	11.473	22	10 21 55.09	2.2962	10 13 8.9	16.918
23	8 30 5.33	2.4681	N.21 39 15.5	11.626	23	10 24 12.77	2.2932	N. 9 56 11.8	16.986
	WEDNESDAY 26.					**FRIDAY 28.**			
0	8 32 33.31	2.4645	N.21 27 33.4	11.776	0	10 26 30.27	2.2903	N. 9 39 10.6	17.051
1	8 35 1.07	2.4608	21 15 42.4	11.924	1	10 28 47.60	2.2875	9 22 5.6	17.114
2	8 37 28.61	2.4572	21 3 42.5	12.072	2	10 31 4.77	2.2848	9 4 56.9	17.176
3	8 39 55.93	2.4534	20 51 33.7	12.219	3	10 33 21.78	2.2822	8 47 44.5	17.235
4	8 42 23.02	2.4497	20 39 16.2	12.364	4	10 35 38.63	2.2796	8 30 28.7	17.292
5	8 44 49.89	2.4459	20 26 50.0	12.507	5	10 37 55.33	2.2770	8 13 9.5	17.347
6	8 47 16.53	2.4421	20 14 15.3	12.649	6	10 40 11.87	2.2744	7 55 47.0	17.401
7	8 49 42.94	2.4383	2C 1 32.1	12.790	7	10 42 28.26	2.2720	7 38 21.4	17.452
8	8 52 9.12	2.4345	19 48 40.5	12.928	8	10 44 44.51	2.2697	7 20 52.8	17.500
9	8 54 35.08	2.4306	19 35 40.7	13.065	9	10 47 0.63	2.2675	7 3 21.4	17.546
10	8 57 0.80	2.4267	19 22 32.7	13.202	10	10 49 16.61	2.2653	6 45 47.3	17.591
11	8 59 26.28	2.4227	19 9 16.5	13.338	11	10 51 32.46	2.2631	6 28 10.5	17.634
12	9 1 51.53	2.4188	18 55 52.2	13.471	12	10 53 48.18	2.2610	6 10 31.2	17.675
13	9 4 16.54	2.4149	18 42 20.0	13.601	13	10 56 3.78	2.2590	5 52 49.5	17.713
14	9 6 41.32	2.4111	18 28 40.1	13.729	14	10 58 19.26	2.2571	5 35 5.6	17.749
15	9 9 5.87	2.4072	18 14 52.5	13.857	15	11 0 34.63	2.2553	5 17 19.6	17.783
16	9 11 30.18	2.4032	18 0 57.3	13.983	16	11 2 49.89	2.2535	4 59 31.6	17.816
17	9 13 54.26	2.3993	17 46 54.5	14.108	17	11 5 5.05	2.2517	4 41 41.7	17.846
18	9 16 18.10	2.3954	17 32 44.3	14.231	18	11 7 20.10	2.2500	4 23 50.1	17.873
19	9 18 41.71	2.3915	17 18 26.8	14.352	19	11 9 35.05	2.2485	4 5 56.9	17.899
20	9 21 5.08	2.3876	17 4 2.1	14.472	20	11 11 49.92	2.2471	3 48 2.2	17.923
21	9 23 28.22	2.3837	16 49 30.2	14.590	21	11 14 4.70	2.2457	3 30 6.1	17.945
22	9 25 51.13	2.3798	16 34 51.3	14.705	22	11 16 19.40	2.2443	3 12 8.8	17.964
23	9 28 13.80	2.3759	16 20 5.6	14.818	23	11 18 34.02	2.2430	2 54 10.4	17.982
24	9 30 36.24	2.3721	N.16 5 13.1	14.931	24	11 20 48.56	2.2418	N. 2 36 11.0	17.997

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour	Right Ascension.			Diff. for 1 Minute.	Declination.				Diff. for 1 Minute.
	SATURDAY 29.								
	h	m	s	s		°	′	″	″
0	11	20	48.56	2.2418	N.	2	36	11.0	17.997
1	11	23	3.03	2.2407		2	18	10.8	18.010
2	11	25	17.44	2.2397		2	0	9.8	18.022
3	11	27	31.80	2.2388		1	42	8.2	18.031
4	11	29	46.10	2.2379		1	24	6.1	18.037
5	11	32	0.35	2.2372		1	6	3.7	18.042
6	11	34	14.56	2.2365		0	48	1.1	18.044
7	11	36	28.73	2.2358		0	29	58.4	18.045
8	11	38	42.86	2.2352	N.	0	11	55.7	18.044
9	11	40	56.95	2.2347	S.	0	6	6.9	18.041
10	11	43	11.02	2.2343		0	24	9.2	18.035
11	11	45	25.07	2.2340		0	42	11.1	18.028
12	11	47	39.10	2.2338		1	0	12.5	18.018
13	11	49	53.12	2.2337		1	18	13.2	18.006
14	11	52	7.14	2.2336		1	36	13.2	17.993
15	11	54	21.15	2.2335		1	54	12.3	17.977
16	11	56	35.16	2.2336		2	12	10.4	17.958
17	11	58	49.18	2.2337		2	30	7.3	17.938
18	12	1	3.21	2.2340		2	48	3.0	17.917
19	12	3	17.26	2.2343		3	5	57.3	17.893
20	12	5	31.33	2.2347		3	23	50.1	17.867
21	12	7	45.42	2.2351		3	41	41.3	17.838
22	12	9	59.54	2.2357		3	59	30.7	17.808
23	12	12	13.70	2.2364	S.	4	17	18.3	17.777
	SUNDAY, MARCH 1.								
0	12	14	27.91	2.2371	S.	4	35	3 9	17.743

PHASES OF THE MOON.

			d	h	m
☾	Last Quarter . . .	Feb.	5	12	38.0
●	New Moon		13	4	12.6
☽	First Quarter		21	9	14.6
○	Full Moon		28	7	51.3

			d	h
☾	Apogee	Feb.	16	8.0
☾	Perigee		28	23.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Aldebaran	W.	93 9 45	2145	94 59 36	2149	96 49 21	2153	98 38 59	2159
	Pollux	W.	50 14 23	2079	52 5 55	2082	53 57 22	2085	55 48 44	2090
	JUPITER	W.	38 32 23	2037	40 25 0	2040	42 17 32	2043	44 9 59	2048
	Spica	E.	40 48 57	2073	38 57 17	2078	37 5 44	2082	35 14 17	2088
	SATURN	E.	67 1 14	2124	65 10 52	2129	63 20 37	2134	61 30 30	2141
	Antares	E.	86 40 34	2068	84 48 46	2072	82 57 3	2076	81 5 27	2081
	VENUS	E.	111 37 43	2463	109 55 38	2467	108 13 38	2470	106 31 42	2475
	MARS	E.	115 20 56	2300	113 34 57	2304	111 49 3	2308	110 3 15	2312
2	Pollux	W.	65 3 37	2119	66 54 7	2127	68 44 25	2135	70 34 31	2143
	JUPITER	W.	53 30 15	2077	55 21 49	2085	57 13 11	2093	59 4 21	2101
	Regulus	W.	28 6 3	2112	29 56 44	2119	31 47 14	2128	33 37 31	2136
	SATURN	E.	52 22 43	2184	50 33 51	2194	48 45 15	2206	46 56 57	2220
	Antares	E.	71 49 30	2112	69 58 49	2120	68 8 20	2128	66 18 3	2137
	VENUS	E.	98 3 56	2506	96 22 51	2514	94 41 57	2523	93 1 16	2532
	MARS	E.	101 16 10	2344	99 31 15	2352	97 46 31	2360	96 1 59	2370
	SUN	E.	136 46 11	2425	135 3 12	2433	133 20 24	2442	131 37 49	2450
3	Pollux	W.	79 41 35	2192	81 30 14	2202	83 18 38	2214	85 6 45	2225
	JUPITER	W.	68 16 43	2150	70 6 26	2161	71 55 53	2172	73 45 3	2182
	Regulus	W.	42 45 28	2185	44 34 18	2196	46 22 52	2207	48 11 9	2218
	Antares	E.	57 10 10	2186	55 21 21	2196	53 32 48	2208	51 44 32	2219
	VENUS	E.	84 41 12	2585	83 1 56	2596	81 22 56	2609	79 44 13	2621
	MARS	E.	87 22 50	2421	85 39 45	2433	83 56 57	2444	82 14 25	2456
	SUN	E.	123 8 14	2502	121 27 4	2513	119 46 9	2525	118 5 31	2537
4	Pollux	W.	94 3 3	2285	95 49 25	2298	97 35 28	2310	99 21 13	2323
	JUPITER	W.	82 46 36	2242	84 34 1	2255	86 21 7	2267	88 7 55	2280
	Regulus	W.	57 8 14	2279	58 54 45	2291	60 40 58	2303	62 26 53	2316
	Antares	E.	42 47 31	2279	41 1 1	2291	39 14 49	2304	37 28 56	2317
	VENUS	E.	71 34 55	2687	69 57 58	2701	68 21 19	2715	66 44 59	2729
	MARS	E.	73 46 5	2520	72 5 19	2533	70 24 52	2546	68 44 43	2560
	SUN	E.	109 46 36	2601	108 7 42	2615	106 29 7	2628	104 50 50	2642
5	Pollux	W.	108 5 15	2388	109 49 7	2401	111 32 41	2414	113 15 56	2427
	JUPITER	W.	96 57 13	2344	98 42 9	2357	100 26 46	2370	102 11 4	2382
	Regulus	W.	71 11 46	2380	72 55 49	2394	74 39 33	2407	76 22 58	2419
	VENUS	E.	58 48 6	2802	57 13 41	2818	55 39 36	2832	54 5 50	2848
	MARS	E.	60 28 43	2629	58 50 28	2643	57 12 32	2657	55 34 55	2671
	SUN	E.	96 44 2	2710	95 7 36	2725	93 31 29	2738	91 55 40	2752
6	JUPITER	W.	110 48 1	2446	112 30 30	2459	114 12 41	2471	115 54 35	2484
	Regulus	W.	84 55 32	2483	86 37 9	2495	88 18 29	2507	89 59 32	2520
	Spica	W.	30 57 6	2492	32 38 31	2503	34 19 40	2515	36 0 32	2527
	VENUS	E.	46 21 53	2924	44 50 4	2939	43 18 34	2954	41 47 24	2970
	MARS	E.	47 31 31	2742	45 55 47	2756	44 20 21	2769	42 45 13	2784
	SUN	E.	84 1 6	2821	82 27 5	2834	80 53 21	2847	79 19 54	2861
7	Regulus	W.	98 20 32	2580	99 59 55	2591	101 39 3	2602	103 17 55	2614
	Spica	W.	44 20 52	2585	46 0 8	2596	47 39 9	2607	49 17 55	2618
	VENUS	E.	34 16 32	3051	32 47 22	3069	31 18 34	3086	29 50 7	3105
	SUN	E.	71 36 53	2925	70 5 6	2937	68 33 34	2949	67 2 17	2962

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV$^{\text{h}}$.	P. L. of Diff.	XVIII$^{\text{h}}$.	P. L. of Diff.	XXI$^{\text{h}}$.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Aldebaran	W.	100 28 28	2165	102 17 48	2172	104 6 58	2180	105 55 56	2188
	Pollux	W.	57 39 59	2094	59 31 7	2100	61 22 6	2106	63 12 56	2112
	JUPITER	W.	46 2 19	2052	47 54 32	2058	49 46 36	2064	51 38 31	2071
	Spica	E.	33 22 59	2094	31 31 50	2100	29 40 51	2107	27 50 3	2116
	SATURN	E.	59 40 33	2148	57 50 47	2155	56 1 12	2164	54 11 50	2174
	Antares	E.	79 13 58	2086	77 22 37	2092	75 31 25	2098	73 40 22	2105
	VENUS	E.	104 49 53	2480	103 8 11	2485	101 26 37	2492	99 45 12	2498
	MARS	E.	108 17 33	2317	106 31 59	2323	104 46 33	2329	103 1 16	2337
2	Pollux	W.	72 24 24	2152	74 14 4	2162	76 3 29	2171	77 52 40	2182
	JUPITER	W.	60 55 18	2111	62 46 1	2120	64 36 30	2130	66 26 44	2139
	Regulus	W.	35 27 35	2145	37 17 25	2155	39 7 1	2165	40 56 22	2174
	SATURN	E.	45 8 59	2233	43 21 21	2248	41 34 5	2264	39 47 12	2281
	Antares	E.	64 28 0	2145	62 38 10	2155	60 48 35	2165	58 59 15	2175
	VENUS	E.	91 20 47	2541	89 40 31	2552	88 0 30	2562	86 20 43	2574
	MARS	E.	94 17 41	2379	92 33 36	2389	90 49 46	2399	89 6 10	2410
	SUN	E.	129 55 26	2460	128 13 17	2470	126 31 21	2480	124 49 40	2491
3	Pollux	W.	86 54 36	2237	88 42 9	2248	90 29 25	2260	92 16 23	2272
	JUPITER	W.	75 33 57	2194	77 22 33	2206	79 10 52	2218	80 58 53	2230
	Regulus	W.	49 59 9	2230	51 46 52	2242	53 34 17	2253	55 21 25	2266
	Antares	E.	49 56 32	2231	48 8 50	2243	46 21 26	2254	44 34 19	2267
	VENUS	E.	78 5 46	2634	76 27 37	2646	74 49 45	2660	73 12 11	2673
	MARS	E.	80 32 10	2468	78 50 12	2481	77 8 32	2493	75 27 9	2507
	SUN	E.	116 25 9	2549	114 45 4	2562	113 5 17	2575	111 25 48	2588
4	Pollux	W.	101 6 39	2336	102 51 46	2348	104 36 35	2362	106 21 4	2375
	JUPITER	W.	89 54 24	2293	91 40 34	2305	93 26 26	2318	95 11 59	2331
	Regulus	W.	64 12 29	2329	65 57 46	2342	67 42 45	2355	69 27 25	2368
	Antares	E.	35 43 22	2330	33 58 6	2343	32 13 9	2356	30 28 31	2368
	VENUS	E.	65 8 58	2744	63 33 16	2758	61 57 53	2773	60 22 50	2788
	MARS	E.	67 4 53	2574	65 25 22	2588	63 46 10	2601	62 7 17	2615
	SUN	E.	103 12 52	2655	101 35 12	2669	99 57 50	2683	98 20 47	2696
5	Pollux	W.	114 58 52	2441	116 41 29	2453	118 23 49	2465	120 5 51	2480
	JUPITER	W.	103 55 4	2395	105 38 46	2408	107 22 9	2421	109 5 14	2433
	Regulus	W.	78 6 5	2433	79 48 53	2445	81 31 24	2458	83 13 37	2470
	VENUS	E.	52 32 24	2862	50 59 17	2878	49 26 30	2893	47 54 2	2908
	MARS	E.	53 57 36	2686	52 20 37	2699	50 43 56	2713	49 7 34	2728
	SUN	E.	90 20 9	2766	88 44 56	2780	87 10 2	2793	85 35 25	2807
6	JUPITER	W.	117 36 11	2496	119 17 30	2508	120 58 32	2520	122 39 18	2532
	Regulus	W.	91 40 17	2533	93 20 45	2544	95 0 57	2556	96 40 53	2568
	Spica	W.	37 41 8	2538	39 21 28	2550	41 1 32	2561	42 41 20	2573
	VENUS	E.	40 16 34	2986	38 46 4	3001	37 15 53	3018	35 46 2	3034
	MARS	E.	41 10 24	2798	39 35 53	2811	38 1 40	2825	36 27 45	2840
	SUN	E.	77 46 45	2873	76 13 52	2887	74 41 16	2899	73 8 56	2912
7	Regulus	W.	104 56 31	2625	106 34 52	2635	108 12 59	2646	109 50 51	2657
	Spica	W.	50 56 26	2629	52 34 42	2639	54 12 44	2650	55 50 31	2660
	VENUS	E.	28 22 3	3124	26 54 22	3144	25 27 6	3165	24 0 15	3188
	SUN	E.	65 31 16	2973	64 0 30	2985	62 29 58	2997	60 59 41	3009

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Regulus	W.	111 28 29	2667	113 5 53	2678	114 43 3	2687	116 20 0	2698
	Spica	W.	57 28 4	2671	59 5 23	2681	60 42 29	2690	62 19 22	2701
	SATURN	W.	31 56 21	2806	33 30 41	2806	35 5 1	2807	36 39 20	2808
	SUN	E.	59 29 39	3020	57 59 51	3030	56 30 16	3041	55 0 54	3052
9	Spica	W.	70 20 31	2748	71 56 7	2756	73 31 32	2766	75 6 45	2774
	SATURN	W.	44 30 0	2828	46 3 51	2834	47 37 35	2839	49 11 12	2845
	Antares	W.	24 26 33	2747	26 2 11	2756	27 37 37	2764	29 12 52	2773
	SUN	E.	47 37 21	3103	46 9 15	3114	44 41 22	3124	43 13 41	3133
10	Spica	W.	83 0 2	2816	84 34 9	2823	86 8 5	2831	87 41 52	2840
	SATURN	W.	56 57 24	2875	58 30 15	2881	60 2 58	2887	61 35 33	2894
	Antares	W.	37 6 17	2815	38 40 26	2822	40 14 25	2830	41 48 14	2838
	SUN	E.	35 58 4	3178	34 31 29	3188	33 5 5	3196	31 38 51	3204
11	Spica	W.	95 28 16	2876	97 1 5	2884	98 33 44	2891	100 6 14	2898
	SATURN	W.	69 16 25	2926	70 48 11	2932	72 19 49	2939	73 51 19	2944
	Antares	W.	49 34 50	2875	51 7 41	2883	52 40 22	2890	54 12 54	2896
	SUN	E.	24 30 11	3246	23 4 56	3254	21 39 51	3262	20 14 55	3270
14	SUN	W.	9 2 34	3418	10 24 30	3418	11 46 26	3421	13 8 19	3423
	α Arietis	E.	62 16 22	3043	60 47 3	3049	59 17 51	3054	57 48 45	3060
	Aldebaran	E.	93 56 39	3097	92 28 26	3101	91 0 18	3105	89 32 15	3110
15	SUN	W.	19 56 51	3440	21 18 22	3444	22 39 49	3446	24 1 13	3450
	α Arietis	E.	50 24 51	3085	48 56 23	3089	47 28 0	3094	45 59 43	3099
	Aldebaran	E.	82 13 22	3132	80 45 51	3135	79 18 24	3139	77 51 2	3143
16	SUN	W.	30 47 27	3461	32 8 35	3463	33 29 41	3464	34 50 45	3465
	α Arietis	E.	38 39 45	3123	37 12 3	3128	35 44 27	3133	34 16 57	3138
	Aldebaran	E.	70 35 21	3161	69 8 25	3165	67 41 34	3168	66 14 47	3171
	Pollux	E.	113 14 22	3082	111 45 50	3082	110 17 19	3084	108 48 50	3085
17	SUN	W.	41 35 56	3465	42 56 59	3465	44 18 2	3463	45 39 7	3462
	Aldebaran	E.	59 1 44	3186	57 35 18	3188	56 8 55	3192	54 42 36	3194
	Pollux	E.	101 26 35	3086	99 58 8	3085	98 29 40	3083	97 1 10	3082
	JUPITER	E.	111 11 46	3043	109 42 27	3043	108 13 7	3042	106 43 46	3040
18	SUN	W.	52 25 7	3448	53 46 29	3445	55 7 55	3440	56 29 26	3435
	Aldebaran	E.	47 31 53	3211	46 5 57	3214	44 40 5	3219	43 14 18	3224
	Pollux	E.	89 38 8	3070	88 9 22	3066	86 40 31	3063	85 11 36	3058
	JUPITER	E.	99 16 28	3029	97 46 51	3025	96 17 9	3022	94 47 23	3018
19	SUN	W.	63 18 33	3405	64 40 44	3397	66 3 4	3390	67 25 32	3381
	Pollux	E.	77 45 30	3031	76 15 56	3024	74 46 13	3017	73 16 22	300
	JUPITER	E.	87 17 5	2990	85 46 40	2984	84 16 7	2977	82 45 26	296
	Regulus	E.	114 39 42	3024	113 9 59	3018	111 40 8	3010	110 10 8	300
20	SUN	W.	74 20 28	3332	75 44 2	3322	77 7 48	3310	78 31 48	329
	Pollux	E.	65 44 34	2966	64 13 39	2956	62 42 31	2946	61 11 10	293
	JUPITER	E.	75 9 28	2926	73 37 42	2916	72 5 44	2906	70 33 33	289
	Regulus	E.	102 37 35	2958	101 6 30	2948	99 35 12	2938	98 3 41	292

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
8	Regulus	W.	117 56 43	2707	119 33 13	2716	121 9 31	2726	122 45 36	2736
	Spica	W.	63 56 1	2710	65 32 27	2719	67 8 41	2729	68 44 42	2738
	Saturn	W.	38 13 37	2811	39 47 50	2815	41 21 59	2819	42 56 2	2823
	Sun	E.	53 31 46	3063	52 2 51	3073	50 34 8	3083	49 5 38	3094
9	Spica	W.	76 41 47	2783	78 16 37	2792	79 51 16	2800	81 25 44	2808
	Saturn	W.	50 44 42	2851	52 18 4	2856	53 51 19	2863	55 24 25	2869
	Antares	W.	30 47 55	2782	32 22 47	2790	33 57 28	2798	35 31 58	2807
	Sun	E.	41 46 11	3142	40 18 52	3152	38 51 45	3161	37 24 49	3170
10	Spica	W.	89 15 28	2848	90 48 54	2855	92 22 11	2862	93 55 18	2869
	Saturn	W.	63 7 59	2901	64 40 17	2906	66 12 28	2912	67 44 31	2920
	Antares	W.	43 21 52	2845	44 55 21	2853	46 28 40	2860	48 1 50	2868
	Sun	E.	30 12 47	3213	28 46 53	3221	27 21 9	3230	25 55 35	3238
11	Spica	W.	101 38 35	2905	103 10 47	2912	104 42 51	2919	106 14 46	2926
	Saturn	W.	75 22 42	2951	76 53 56	2957	78 25 3	2963	79 56 2	2969
	Antares	W.	55 45 18	2903	57 17 33	2910	58 49 39	2916	60 21 37	2924
	Sun	E.	18 50 9	3278	17 25 32	3287	16 1 5	3295	14 36 48	3303
14	Sun	W.	14 30 9	3427	15 51 55	3430	17 13 38	3434	18 35 16	3437
	α Arietis	E.	56 19 46	3065	54 50 53	3069	53 22 6	3074	51 53 25	3080
	Aldebaran	E.	88 4 18	3114	86 36 26	3119	85 8 40	3123	83 40 58	3128
15	Sun	W.	25 22 33	3453	26 43 50	3454	28 5 5	3457	29 26 17	3459
	α Arietis	E.	44 31 32	3104	43 3 27	3108	41 35 27	3113	40 7 33	3118
	Aldebaran	E.	76 23 45	3147	74 56 32	3151	73 29 24	3154	72 2 20	3158
16	Sun	W.	36 11 48	3466	37 32 50	3466	38 53 52	3466	40 14 54	3466
	α Arietis	E.	32 49 34	3144	31 22 18	3150	29 55 9	3158	28 28 9	3164
	Aldebaran	E.	64 48 3	3174	63 21 23	3177	61 54 46	3180	60 28 13	3183
	Pollux	E.	107 20 22	3086	105 51 55	3086	104 23 28	3087	102 55 2	3086
17	Sun	W.	47 0 14	3460	48 21 23	3457	49 42 35	3455	51 3 49	3452
	Aldebaran	E.	53 16 20	3198	51 50 8	3200	50 23 59	3204	48 57 54	3207
	Pollux	E.	95 32 39	3080	94 4 5	3078	92 35 29	3076	91 6 50	3073
	Jupiter	E.	105 14 23	3039	103 44 58	3037	102 15 31	3034	100 46 1	3032
18	Sun	W.	57 51 3	3431	59 12 45	3424	60 34 34	3418	61 56 30	3412
	Aldebaran	E.	41 48 37	3230	40 23 3	3236	38 57 36	3243	37 32 18	3253
	Pollux	E.	83 42 35	3054	82 13 29	3048	80 44 16	3043	79 14 57	3037
	Jupiter	E.	93 17 32	3013	91 47 35	3008	90 17 32	3002	88 47 22	2997
19	Sun	W.	68 48 10	3372	70 10 58	3363	71 33 57	3353	72 57 7	3343
	Pollux	E.	71 46 21	3001	70 16 10	2993	68 45 49	2985	67 15 17	2976
	Jupiter	E.	81 14 35	2962	79 43 34	2954	78 12 23	2945	76 41 1	2936
	Regulus	E.	108 39 59	2994	107 9 39	2986	105 39 9	2977	104 8 28	2968
20	Sun	W.	79 56 2	3285	81 20 31	3272	82 45 15	3259	84 10 14	3245
	Pollux	E.	59 39 36	2924	58 7 47	2912	56 35 44	2900	55 3 25	2887
	Jupiter	E.	69 1 8	2884	67 28 29	2872	65 55 34	2860	64 22 24	2848
	Regulus	E.	96 31 55	2915	94 59 55	2903	93 27 40	2891	91 55 9	2878

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III$^{h.}$	P. L. of Diff.	VI$^{h.}$	P. L. of Diff.	IX$^{h.}$	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
21	SUN	W.	85 35 30	3231	87 1 3	3216	88 26 53	3201	89 53 1	3186
	Pollux	E.	53 30 50	2875	51 57 59	2862	50 24 51	2848	48 51 26	2835
	JUPITER	E.	62 48 58	2835	61 15 15	2822	59 41 16	2808	58 6 59	2795
	Regulus	E.	90 22 22	2865	88 49 18	2852	87 15 57	2838	85 42 18	2823
22	SUN	W.	97 8 32	3101	98 36 40	3084	100 5 9	3065	101 34 1	3047
	α Arietis	W.	34 22 26	2801	35 56 52	2782	37 31 44	2761	39 7 3	2741
	Pollux	E.	40 59 47	2762	39 24 29	2746	37 48 50	2731	36 12 51	2716
	JUPITER	E.	50 10 51	2719	48 34 37	2704	46 58 2	2688	45 21 6	2671
	Regulus	E.	77 49 12	2746	76 13 33	2730	74 37 33	2713	73 1 10	2696
23	SUN	W.	109 4 11	2950	110 35 26	2931	112 7 6	2910	113 39 12	2890
	α Arietis	W.	47 10 21	2640	48 48 21	2620	50 26 49	2600	52 5 44	2580
	JUPITER	E.	37 10 44	2585	35 31 29	2569	33 51 51	2551	32 11 49	2533
	Regulus	E.	64 53 28	2607	63 14 43	2588	61 35 32	2569	59 55 55	2551
	Spica	E.	118 54 4	2610	117 15 23	2591	115 36 16	2573	113 56 44	2554
24	SUN	W.	121 26 14	2787	123 0 59	2766	124 36 11	2746	126 11 50	2725
	α Arietis	W.	60 27 15	2480	62 8 57	2460	63 51 7	2440	65 33 45	2420
	Aldebaran	W.	30 15 16	2762	31 50 34	2713	33 26 56	2670	35 4 16	2629
	Regulus	E.	51 31 20	2456	49 49 5	2436	48 6 22	2417	46 23 12	2398
	Spica	E.	105 32 29	2459	103 50 18	2439	102 7 39	2420	100 24 33	2401
25	α Arietis	W.	74 13 53	2324	75 59 17	2305	77 45 9	2287	79 31 28	2269
	Aldebaran	W.	43 23 25	2466	45 5 26	2438	46 48 7	2411	48 31 26	2386
	Regulus	E.	37 40 33	2304	35 54 40	2286	34 8 20	2268	32 21 34	2250
	Spica	E.	91 42 12	2307	89 56 22	2289	88 10 6	2271	86 23 24	2253
	SATURN	E.	118 1 30	2353	116 16 47	2333	114 31 36	2313	112 45 56	2295
26	α Arietis	W.	88 29 28	2185	90 18 18	2170	92 7 31	2155	93 57 7	2141
	Aldebaran	W.	57 16 39	2274	59 3 16	2255	60 50 22	2236	62 37 56	2218
	Spica	E.	77 23 26	2170	75 34 13	2154	73 44 36	2139	71 54 37	2124
	SATURN	E.	103 50 53	2207	102 2 36	2190	100 13 54	2175	98 24 49	2160
27	α Arietis	W.	103 10 16	2077	105 1 50	2067	106 53 40	2057	108 45 46	2048
	Aldebaran	W.	71 41 57	2143	73 31 51	2130	75 22 5	2118	77 12 36	2107
	Spica	E.	62 39 25	2061	60 47 26	2050	58 55 10	2040	57 2 38	2031
	SATURN	E.	89 14 4	2096	87 22 58	2085	85 31 35	2074	83 39 56	2065
	Antares	E.	108 32 12	2058	106 40 8	2048	104 47 48	2037	102 55 12	2028
28	Aldebaran	W.	86 28 52	2067	88 20 42	2062	90 12 40	2058	92 4 44	2054
	Pollux	W.	43 27 33	2003	45 21 2	1997	47 14 41	1993	49 8 27	1988
	JUPITER	W.	34 42 11	1977	36 36 22	1972	38 30 41	1967	40 25 8	1963
	Spica	E.	47 36 43	1995	45 43 1	1990	43 49 11	1986	41 55 15	1983
	SATURN	E.	74 18 31	2030	72 25 44	2026	70 32 51	2023	68 39 52	2021
	Antares	E.	93 28 49	1991	91 35 0	1986	89 41 3	1981	87 46 59	197
29	Aldebaran	W.	101 25 55	2052	103 18 8	2055	105 10 17	2058	107 2 21	206
	Pollux	W.	58 38 30	1981	60 32 35	1981	62 26 39	1983	64 20 41	198
	JUPITER	W.	49 58 31	1955	51 53 16	1956	53 48 0	1958	55 42 40	1961
	SATURN	E.	59 14 32	2023	57 21 33	2026	55 28 39	2031	53 35 53	203
	Antares	E.	78 15 40	1972	76 21 22	1973	74 27 5	1975	72 32 51	197

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
21	SUN	W.	91 19 28	3169	92 46 14	3153	94 13 20	3136	95 40 46	3119
	Pollux	E.	47 17 44	2821	45 43 43	2807	44 9 24	2792	42 34 45	2777
	JUPITER	E.	56 32 24	2780	54 57 30	2766	53 22 17	2750	51 46 44	2735
	Regulus	E.	84 8 20	2808	82 34 3	2793	80 59 26	2778	79 24 29	2763
22	SUN	W.	103 3 16	3028	104 32 54	3009	106 2 55	2989	107 33 21	2970
	α Arietis	W.	40 42 49	2720	42 19 2	2701	43 55 41	2681	45 32 47	2660
	Pollux	E.	34 36 32	2700	32 59 52	2684	31 22 51	2669	29 45 29	2652
	JUPITER	E.	43 43 47	2655	42 6 6	2638	40 28 2	2621	38 49 35	2603
	Regulus	E.	71 24 25	2679	69 47 17	2661	68 9 45	2643	66 31 49	2625
23	SUN	W.	115 11 43	2869	116 44 41	2849	118 18 5	2828	119 51 56	2808
	α Arietis	W.	53 45 7	2560	55 24 57	2540	57 5 15	2520	58 46 1	2499
	JUPITER	E.	30 31 22	2516	28 50 31	2499	27 9 16	2482	25 27 37	2465
	Regulus	E.	58 15 53	2533	56 35 25	2513	54 54 30	2494	53 13 8	2475
	Spica	E.	112 16 46	2535	110 36 22	2516	108 55 31	2497	107 14 13	2478
24	SUN	W.	127 47 57	2704	129 24 31	2684	131 1 33	2664	132 39 1	2643
	α Arietis	W.	67 16 51	2401	69 0 25	2381	70 44 27	2362	72 28 56	2343
	Aldebaran	W.	36 42 31	2593	38 21 36	2559	40 1 28	2526	41 42 5	2495
	Regulus	E.	44 39 35	2379	42 55 30	2360	41 10 58	2342	39 25 59	2323
	Spica	E.	98 40 59	2382	96 56 58	2363	95 12 30	2344	93 27 35	2325
25	α Arietis	W.	81 18 13	2251	83 5 24	2234	84 53 1	2218	86 41 2	2201
	Aldebaran	W.	50 15 21	2362	51 59 51	2338	53 44 55	2316	55 30 31	2294
	Regulus	E.	30 34 21	2233	28 46 43	2216	26 58 39	2199	25 10 10	2183
	Spica	E.	84 36 15	2235	82 48 40	2218	81 0 40	2202	79 12 15	2186
	SATURN	E.	110 59 49	2276	109 13 14	2258	107 26 13	2241	105 38 46	2223
26	α Arietis	W.	95 47 4	2127	97 37 22	2113	99 28 1	2101	101 18 59	2088
	Aldebaran	W.	64 25 56	2201	66 14 22	2186	68 3 11	2170	69 52 23	2156
	Spica	E.	70 4 15	2111	68 13 32	2098	66 22 29	2085	64 31 6	2073
	SATURN	E.	96 35 21	2146	94 45 32	2132	92 55 22	2119	91 4 52	2107
27	α Arietis	W.	110 38 6	2039	112 30 39	2032	114 23 24	2025	116 16 19	2019
	Aldebaran	W.	79 3 24	2098	80 54 27	2089	82 45 43	2081	84 37 12	2073
	Spica	E.	55 9 52	2022	53 16 52	2014	51 23 40	2007	49 30 17	2000
	SATURN	E.	81 48 3	2056	79 55 56	2049	78 3 38	2042	76 11 9	2036
	Antares	E.	101 2 21	2019	99 9 16	2010	97 15 58	2003	95 22 29	1996
28	Aldebaran	W.	93 56 54	2052	95 49 7	2050	97 41 23	2050	99 33 39	2050
	Pollux	W.	51 2 20	1985	52 56 18	1982	54 50 20	1981	56 44 24	1980
	JUPITER	W.	42 19 41	1960	44 14 19	1957	46 9 1	1956	48 3 45	1955
	Spica	E.	40 1 14	1981	38 7 10	1979	36 13 3	1979	34 18 55	1979
	SATURN	E.	66 46 50	2019	64 53 45	2019	63 0 40	2019	61 7 35	2020
	Antares	E.	85 52 49	1975	83 58 35	1973	82 4 18	1972	80 9 59	1972
29	Aldebaran	W.	108 54 18	2068	110 46 6	2075	112 37 44	2082	114 29 11	2091
	Pollux	W.	66 14 38	1989	68 8 30	1993	70 2 15	1998	71 55 53	2003
	JUPITER	W.	57 37 16	1965	59 31 46	1968	61 26 10	1974	63 20 26	1979
	SATURN	E.	51 43 15	2043	49 50 48	2051	47 58 33	2060	46 6 32	2070
	Antares	E.	70 38 42	1982	68 44 39	1986	66 50 42	1991	64 56 53	1997

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
SUN.	1	22 51 33.99	9.342	S. 7 16 26.1	+57.17	16 10.29	65.39	12 23.12	0.513
Mon.	2	22 55 17.95	9.322	6 53 30.9	57.42	16 10.04	65.32	12 10.57	0.533
Tues.	3	22 59 1.46	9.303	6 30 29.9	57.66	16 9.78	65.25	11 57.55	0.552
Wed.	4	23 2 44.51	9.285	6 7 23.3	+57.88	16 9.53	65.18	11 44.09	0.570
Thur.	5	23 6 27.14	9.268	5 44 11.6	58.09	16 9.27	65.12	11 30.21	0.587
Frid.	6	23 10 9.37	9.252	5 20 55.1	58.28	16 9.01	65.06	11 15.92	0.603
Sat.	7	23 13 51.22	9.236	4 57 34.2	+58.45	16 8.74	65.00	11 1.25	0.619
SUN.	8	23 17 32.70	9.221	4 34 9.3	58.61	16 8.48	64.95	10 46.22	0.633
Mon.	9	23 21 13.83	9.207	4 10 40.8	58.75	16 8.21	64.90	10 30.84	0.647
Tues.	10	23 24 54.64	9.194	3 47 9.1	+58.88	16 7.95	64.85	10 15.14	0.660
Wed.	11	23 28 35.14	9.182	3 23 34.5	58.99	16 7.68	64.80	9 59.13	0.673
Thur.	12	23 32 15.36	9.170	2 59 57.6	59.08	16 7.41	64.76	9 42.84	0.685
Frid.	13	23 35 55.30	9.159	2 36 18.5	+59.16	16 7.14	64.72	9 26.27	0.696
Sat.	14	23 39 34.98	9.149	2 12 37.9	59.22	16 6.87	64.68	9 9.44	0.706
SUN.	15	23 43 14.42	9.139	1 48 56.1	59.26	16 6.60	64.65	8 52.38	0.716
Mon.	16	23 46 53.64	9.130	1 25 13.4	+59.29	16 6.34	64.62	8 35.10	0.725
Tues.	17	23 50 32.65	9.122	1 1 30.3	59.30	16 6.07	64.59	8 17.60	0.733
Wed.	18	23 54 11.48	9.115	0 37 47.2	59.29	16 5.80	64.57	7 59.92	0.740
Thur.	19	23 57 50.13	9.108	S. 0 14 4.4	+59.27	16 5.53	64.55	7 42.07	0.747
Frid.	20	0 1 28.64	9.102	N. 0 9 37.6	59.23	16 5.26	64.53	7 24.07	0.753
Sat.	21	0 5 7.01	9.096	0 33 18.5	59.17	16 5.00	64.51	7 5.94	0.758
SUN.	22	0 8 45.27	9.092	0 56 58.0	+59.10	16 4.73	64.50	6 47.70	0.762
Mon.	23	0 12 23.44	9.089	1 20 35.7	59.02	16 4.46	64.49	6 29.36	0.766
Tues.	24	0 16 1.53	9.087	1 44 11.2	58.93	16 4.19	64.48	6 10.95	0.768
Wed.	25	0 19 39.57	9.085	2 7 44.2	+58.82	16 3.91	64.48	5 52.49	0.770
Thur.	26	0 23 17.60	9.084	2 31 14.4	58.69	16 3.64	64.48	5 34.01	0.770
Frid.	27	0 26 55.61	9.084	2 54 41.4	58.55	16 3.37	64.48	5 15.52	0.770
Sat.	28	0 30 33.64	9.086	3 18 5.0	+58.40	16 3.09	64.49	4 57.05	0.769
SUN.	29	0 34 11.72	9.088	3 41 24.7	58.24	16 2.81	64.50	4 38.63	0.766
Mon.	30	0 37 49.87	9.091	4 4 40.4	58.06	16 2.53	64.51	4 20.27	0.763
Tues.	31	0 41 28.10	9.095	4 27 51.6	57.87	16 2.25	64.52	4 2.00	0.759
Wed.	32	0 45 6.44	9.100	N. 4 50 58.1	+57.65	16 1.97	64.54	3 43.84	0.754

Note.—The mean time of semidiameter passing may be found by subtracting 0ˢ.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
SUN.	1	22 51 32.06	9.344	S. 7 16 38.0	+57.18	12 23.23	0.513	22 39 8.83
Mon.	2	22 55 16.06	9.324	6 53 42.6	57.43	12 10.68	0.533	22 43 5.38
Tues.	3	22 58 59.60	9.305	6 30 41.4	57.67	11 57.66	0.552	22 47 1.94
Wed.	4	23 2 42.69	9.287	6 7 34.7	+57.89	11 44.20	0.570	22 50 58.49
Thur.	5	23 6 25.36	9.270	5 44 22.8	58.09	11 30.32	0.587	22 54 55.04
Frid.	6	23 10 7.63	9.253	5 21 6.1	58.28	11 16.03	0.603	22 58 51.60
Sat.	7	23 13 49.52	9.238	4 57 45.0	+58.46	11 1.37	0.619	23 2 48.15
SUN.	8	23 17 31.04	9.223	4 34 19.9	58.62	10 46.34	0.634	23 6 44.71
Mon.	9	23 21 12.22	9.209	4 10 51.2	58.76	10 30.96	0.648	23 10 41.26
Tues.	10	23 24 53.07	9.196	3 47 19.2	+58.89	10 15.26	0.661	23 14 37.81
Wed.	11	23 28 33.62	9.184	3 23 44.4	59.00	9 59.25	0.673	23 18 34.37
Thur.	12	23 32 13.87	9.172	3 0 7.2	59.09	9 42.95	0.685	23 22 30.92
Frid.	13	23 35 53.85	9.161	2 36 27.9	+59.17	9 26.38	0.696	23 26 27.48
Sat.	14	23 39 33.58	9.150	2 12 47.0	59.23	9 9.55	0.706	23 30 24.03
SUN.	15	23 43 13.07	9.141	1 49 4.9	59.27	8 52.49	0.716	23 34 20.58
Mon.	16	23 46 52.34	9.132	1 25 21.9	+59.30	8 35.20	0.725	23 38 17.14
Tues.	17	23 50 31.39	9.124	1 1 38.5	59.31	8 17.70	0.733	23 42 13.69
Wed.	18	23 54 10.26	9.116	0 37 55.2	59.30	8 0.02	0.740	23 46 10.24
Thur.	19	23 57 48.97	9.109	S. 0 14 12.1	+59.28	7 42.17	0.747	23 50 6.80
Frid.	20	0 1 27.52	9.103	N. 0 9 30.3	59.24	7 24.17	0.753	23 54 3.35
Sat.	21	0 5 5.93	9.098	0 33 11.5	59.19	7 6.03	0.758	23 57 59.90
SUN.	22	0 8 44.24	9.094	0 56 51.3	+59.12	6 47.78	0.762	0 1 56.46
Mon.	23	0 12 22.45	9.091	1 20 29.3	59.03	6 29.44	0.766	0 5 53.01
Tues.	24	0 16 0.59	9.088	1 44 5.1	58.93	6 11.03	0.768	0 9 49.56
Wed.	25	0 19 38.69	9.087	2 7 38.4	+58.83	5 52.57	0.770	0 13 46.12
Thur.	26	0 23 16.75	9.086	2 31 8.9	58.71	5 34.08	0.770	0 17 42.67
Frid.	27	0 26 54.81	9.086	2 54 36.2	58.57	5 15.59	0.770	0 21 39.22
Sat.	28	0 30 32.90	9.088	3 18 0.1	+58.42	4 57.12	0.769	0 25 35.78
SUN.	29	0 34 11.02	9.090	3 41 20.2	58.25	4 38.69	0.767	0 29 32.33
Mon.	30	0 37 49.21	9.093	4 4 36.2	58.07	4 20.32	0.763	0 33 28.88
Tues.	31	0 41 27.49	9.097	4 27 47.7	57.88	4 2.05	0.759	0 37 25.44
Wed.	32	0 45 5.88	9.102	N. 4 50 54.5	+57.68	3 43.89	0.754	0 41 21.99

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

Diff. for 1 Hour $+9^{s}.8565$ (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	61	341 26 57.3	26 40.7	150.32	− 0.33	9.9962753	+46.2	1 20 37.92
2	62	342 27 4.1	26 47.4	150.25	0.44	9.9963869	46.9	1 16 42.02
3	63	343 27 9.4	26 52.6	150.19	0.53	9.9965001	47.5	1 12 46.11
4	64	344 27 13.0	26 56.0	150.12	− 0.59	9.9966148	+48.0	1 8 50.20
5	65	345 27 14.9	26 57.8	150.05	0.62	9.9967307	48.5	1 4 54.29
6	66	346 27 15.3	26 58.1	149.98	0.62	9.9968477	48.9	1 0 58.38
7	67	347 27 14.0	26 56.7	149.91	− 0.60	9.9969657	+49.3	0 57 2.48
8	68	348 27 11.1	26 53.7	149.84	0.55	9.9970845	49.6	0 53 6.57
9	69	349 27 6.6	26 49.0	149.77	0.46	9.9972040	49.8	0 49 10.66
10	70	350 27 0.3	26 42.6	149.70	− 0.35	9.9973239	+50.0	0 45 14.75
11	71	351 26 52.4	26 34.6	149.63	0.24	9.9974440	50.1	0 41 18.84
12	72	352 26 42.6	26 24.7	149.55	− 0.12	9.9975644	50.2	0 37 22.94
13	73	353 26 31.0	26 13.0	149.47	+ 0.02	9.9976849	+50.3	0 33 27.03
14	74	354 26 17.4	25 59.3	149.39	0.15	9.9978055	50.2	0 29 31.12
15	75	355 26 1.8	25 43.6	149.31	0.25	9.9979261	50.2	0 25 35.21
16	76	356 25 44.2	25 25.9	149.22	+ 0.35	9.9980466	+50.2	0 21 39.31
17	77	357 25 24.4	25 6.0	149.13	0.43	9.9981671	50.2	0 17 43.40
18	78	358 25 2.4	24 43.9	149.04	0.48	9.9982874	50.2	0 13 47.49
19	79	359 24 38.3	24 19.7	148.95	+ 0.50	9.9984079	+50.2	0 9 51.58
20	80	0 24 11.8	23 53.1	148.85	0.49	9.9985286	50.3	0 5 55.68
21	81	1 23 42.9	23 24.1	148.75	0.44	9.9986495	50.4	0 1 59.77 23 58 3.86
22	82	2 23 11.8	22 52.9	148.65	+ 0.38	9.9987707	+50.6	23 54 7.95
23	83	3 22 38.3	22 19.3	148.56	0.29	9.9988922	50.8	23 50 12.04
24	84	4 22 2.5	21 43.4	148.46	0.16	9.9990142	51.0	23 46 16.14
25	85	5 21 24.4	21 5.2	148.37	+ 0.03	9.9991368	+51.2	23 42 20.23
26	86	6 20 44.1	20 24.8	148.28	− 0.10	9.9992599	51.4	23 38 24.32
27	87	7 20 1.6	19 42.2	148.18	0.23	9.9993837	51.7	23 34 28.41
28	88	8 19 16.9	18 57.4	148.09	− 0.36	9.9995082	+52.0	23 30 32.51
29	89	9 18 30.1	18 10.4	148.01	0.47	9.9996334	52.3	23 26 36.60
30	90	10 17 41.3	17 21.5	147.93	0.56	9.9997593	52.6	23 22 40.69
31	91	11 16 50.5	16 30.6	147.85	0.63	9.9998858	52.8	23 18 44.78
32	92	12 15 57.9	15 37.9	147.77	− 0.68	0.0000126	+52.9	23 14 48.87

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 1ᵈ.0.

Diff. for 1 Hour, —9ˢ.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
16 41.5	16 38.2	61 9.2	−0.82	60 57.1	−1.18	14 4.6	2.17	16.8
16 33.9	16 28.6	60 41.0	1.48	60 21.6	1.73	14 57.3	2.23	17.8
16 22.5	16 15.9	59 59.4	1.94	59 35.1	2.08	15 51.9	2.32	18.8
16 8.9	16 1.7	59 9.4	−2.17	58 43.0	−2.21	16 48.6	2.40	19.8
15 54.5	15 47.3	58 16.3	2.21	57 50.0	2.16	17 46.6	2.43	20.8
15 40.3	15 33.6	57 24.4	2.09	56 59.8	1.99	18 44.4	2.38	21.8
15 27.3	15 21.4	56 36.6	−1.88	56 14.8	−1.75	19 40.4	2.27	22.8
15 15.9	15 10.9	55 54.6	1.61	55 36.2	1.47	20 33.0	2.11	23.8
15 6.3	15 2.2	55 19.4	1.33	55 4.3	1.19	21 21.8	1.95	24.8
14 58.5	14 55.3	54 50.9	−1.05	54 39.1	−0.92	22 7.0	1.81	25.8
14 52.5	14 50.1	54 28.9	0.79	54 20.1	0.68	22 49.2	1.71	26.8
14 48.1	14 46.5	54 12.7	0.55	54 6.8	0.44	23 29.3	1.64	27.8
14 45.2	14 44.3	54 2.1	−0.33	53 58.8	−0.23	6		28.8
14 43.8	14 43.6	53 56.7	−0.12	53 55.9	−0.01	0 8.3	1.62	0.1
14 43.7	14 44.2	53 56.4	+0.10	53 58.2	+0.21	0 47.2	1.63	1.1
14 45.1	14 46.4	54 1.5	+0.33	54 6.2	+0.46	1 27.0	1.69	2.1
14 48.1	14 50.2	54 12.5	0.59	54 20.4	0.73	2 8.6	1.78	3.1
14 52.8	14 56.0	54 30.0	0.88	54 41.5	1.03	2 52.9	1.91	4.1
14 59.6	15 3.8	54 54.8	+1.19	55 10.1	+1.35	3 40.7	2.07	5.1
15 8.4	15 13.7	55 27.3	1.52	55 46.5	1.68	4 32.1	2.22	6.1
15 19.4	15 25.6	56 7.6	1.83	56 30.5	1.98	5 26.8	2.33	7.1
15 32.3	15 39.4	56 55.1	+2.11	57 21.1	+2.22	6 23.6	2.39	8.1
15 46.8	15 54.4	57 48.3	2.30	58 16.2	2.34	7 20.9	2.38	9.1
16 2.1	16 9.7	58 44.4	2.34	59 12.3	2.29	8 17.3	2.31	10.1
16 17.1	16 24.0	59 39.3	+2.18	60 4.7	+2.02	9 11.9	2.23	11.1
16 30.3	16 35.8	60 27.8	1.80	60 48.0	1.53	10 4.7	2.17	12.1
16 40.2	16 43.5	61 4.4	1.19	61 16.5	+0.81	10 56.5	2.15	13.1
16 45.5	16 46.2	61 23.8	+0.40	61 26.1	−0.02	11 48.2	2.17	14.1
16 45.4	16 43.2	61 23.3	−0.45	61 15.5	0.87	12 41.2	2.25	15.1
16 39.8	16 35.2	61 2.8	1.24	60 45.8	1.58	13 36.5	2.36	16.1
16 29.5	16 23.0	60 24.9	1.86	60 1.1	2.09	14 34.3	2.46	17.1
16 15.8	16 8.2	59 34.8	−2.26	59 6.9	−2.37	15 34.2	2.52	18.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 14 27.91	2.2371	S. 4 35 3.9	17.743
1	12 16 42.16	2.2378	4 52 47.4	17.707
2	12 18 56.45	2.2386	5 10 28.7	17.668
3	12 21 10.79	2.2395	5 28 7.6	17.628
4	12 23 25.19	2.2406	5 45 44.1	17.587
5	12 25 39.66	2.2417	6 3 18.0	17.543
6	12 27 54.19	2.2428	6 20 49.2	17.497
7	12 30 8.79	2.2440	6 38 17.6	17.449
8	12 32 23.47	2.2452	6 55 43.1	17.399
9	12 34 38.22	2.2466	7 13 5.5	17.347
10	12 36 53.06	2.2481	7 30 24.8	17.294
11	12 39 7.99	2.2496	7 47 40.8	17.239
12	12 41 23.01	2.2512	8 4 53.5	17.182
13	12 43 38.13	2.2528	8 22 2.6	17.122
14	12 45 53.35	2.2545	8 39 8.1	17.061
15	12 48 8.67	2.2563	8 56 9.9	16.997
16	12 50 24.10	2.2581	9 13 7.8	16.932
17	12 52 39.64	2.2599	9 30 1.8	16.866
18	12 54 55.29	2.2618	9 46 51.7	16.797
19	12 57 11.06	2.2639	10 3 37.4	16.726
20	12 59 26.96	2.2661	10 20 18.8	16.654
21	13 1 42.99	2.2682	10 36 55.9	16.581
22	13 3 59.15	2.2704	10 53 28.5	16.504
23	13 6 15.44	2.2727	S.11 9 56.4	16.426

MONDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 8 31.87	2.2750	S.11 26 19.6	16.347
1	13 10 48.44	2.2774	11 42 38.0	16.265
2	13 13 5.16	2.2798	11 58 51.4	16.182
3	13 15 22.02	2.2823	12 14 59.8	16.097
4	13 17 39.04	2.2849	12 31 3.1	16.011
5	13 19 56.21	2.2875	12 47 1.1	15.922
6	13 22 13.54	2.2901	13 2 53.8	15.832
7	13 24 31.03	2.2928	13 18 41.0	15.741
8	13 26 48.68	2.2956	13 34 22.7	15.647
9	13 29 6.50	2.2984	13 49 58.7	15.552
10	13 31 24.49	2.3012	14 5 29.0	15.456
11	13 33 42.65	2.3041	14 20 53.4	15.357
12	13 36 0.98	2.3070	14 36 11.9	15.257
13	13 38 19.49	2.3100	14 51 24.3	15.156
14	13 40 38.18	2.3130	15 6 30.6	15.052
15	13 42 57.05	2.3161	15 21 30.6	14.947
16	13 45 16.11	2.3192	15 36 24.3	14.841
17	13 47 35.35	2.3222	15 51 11.5	14.733
18	13 49 54.77	2.3253	16 5 52.2	14.623
19	13 52 14.38	2.3285	16 20 26.3	14.512
20	13 54 34.19	2.3317	16 34 53.7	14.399
21	13 56 54.19	2.3349	16 49 14.2	14.284
22	13 59 14.38	2.3382	17 3 27.8	14.169
23	14 1 34.77	2.3414	17 17 34.5	14.052
24	14 3 55.35	2.3447	S.17 31 34.1	13.933

TUESDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 3 55.35	2.3447	S.17 31 34.1	13.933
1	14 6 16.13	2.3480	17 45 26.5	13.813
2	14 8 37.11	2.3513	17 59 11.7	13.692
3	14 10 58.29	2.3547	18 12 49.5	13.568
4	14 13 19.67	2.3580	18 26 19.8	13.443
5	14 15 41.25	2.3614	18 39 42.7	13.318
6	14 18 3.04	2.3648	18 52 58.0	13.191
7	14 20 25.03	2.3682	19 6 5.6	13.062
8	14 22 47.22	2.3715	19 19 5.5	12.932
9	14 25 9.61	2.3748	19 31 57.5	12.801
10	14 27 32.20	2.3782	19 44 41.6	12.668
11	14 29 55.00	2.3816	19 57 17.7	12.534
12	14 32 18.00	2.3850	20 9 45.7	12.399
13	14 34 41.20	2.3883	20 22 5.6	12.262
14	14 37 4.60	2.3917	20 34 17.2	12.124
15	14 39 28.21	2.3951	20 46 20.5	11.986
16	14 41 52.02	2.3984	20 58 15.5	11.846
17	14 44 16.02	2.4017	21 10 2.0	11.704
18	14 46 40.22	2.4050	21 21 40.0	11.562
19	14 49 4.62	2.4082	21 33 9.4	11.418
20	14 51 29.21	2.4115	21 44 30.1	11.273
21	14 53 54.00	2.4147	21 55 42.2	11.128
22	14 56 18.98	2.4179	22 6 45.5	10.981
23	14 58 44.15	2.4210	S.22 17 39.9	10.832

WEDNESDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 1 9.50	2.4241	S.22 28 25.4	10.683
1	15 3 35.04	2.4272	22 39 1.9	10.533
2	15 6 0.77	2.4303	22 49 29.4	10.382
3	15 8 26.68	2.4333	22 59 47.8	10.230
4	15 10 52.77	2.4363	23 9 57.0	10.077
5	15 13 19.04	2.4393	23 19 57.0	9.922
6	15 15 45.49	2.4422	23 29 47.7	9.767
7	15 18 12.11	2.4450	23 39 29.1	9.612
8	15 20 38.89	2.4477	23 49 1.1	9.455
9	15 23 5.84	2.4505	23 58 23.7	9.297
10	15 25 32.95	2.4532	24 7 36.8	9.138
11	15 28 0.22	2.4557	24 16 40.3	8.979
12	15 30 27.64	2.4582	24 25 34.3	8.820
13	15 32 55.21	2.4607	24 34 18.7	8.659
14	15 35 22.93	2.4632	24 42 53.4	8.497
15	15 37 50.80	2.4656	24 51 18.3	8.334
16	15 40 18.80	2.4678	24 59 33.5	8.171
17	15 42 46.94	2.4701	25 7 38.9	8.008
18	15 45 15.21	2.4722	25 15 34.5	7.844
19	15 47 43.60	2.4742	25 23 20.2	7.679
20	15 50 12.12	2.4762	25 30 56.0	7.513
21	15 52 40.75	2.4781	25 38 21.8	7.347
22	15 55 9.49	2.4799	25 45 37.6	7.180
23	15 57 38.34	2.4817	25 52 43.4	7.013
24	16 0 7.29	2.4832	S.25 59 39.2	6.846

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 5.					**SATURDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 0 7.29	2.4832	S.25 59 39.2	6.846	0	17 59 14.99	2.4379	S.28 11 58.9	1.272
1	16 2 36.33	2.4848	26 6 24.9	6.678	1	18 1 41.16	2.4342	28 10 37.8	1.432
2	16 5 5.47	2.4863	26 13 0.5	6.509	2	18 4 7.10	2.4305	28 9 7.1	1.591
3	16 7 34.69	2.4877	26 19 26.0	6.340	3	18 6 32.82	2.4267	28 7 26.9	1.749
4	16 10 3.99	2.4890	26 25 41.3	6.170	4	18 8 58.31	2.4227	28 5 37.2	1.907
5	16 12 33.37	2.4902	26 31 46.4	6.001	5	18 11 23.55	2.4187	28 3 38.0	2.065
6	16 15 2.81	2.4912	26 37 41.4	5.831	6	18 13 48.55	2.4146	28 1 29.4	2.221
7	16 17 32.31	2.4922	26 43 26.1	5.660	7	18 16 13.30	2.4104	27 59 11.5	2.377
8	16 20 1.87	2.4932	26 49 0.6	5.489	8	18 18 37.80	2.4062	27 56 44.2	2.532
9	16 22 31.49	2.4940	26 54 24.8	5.318	9	18 21 2.04	2.4018	27 54 7.7	2.685
10	16 25 1.15	2.4946	26 59 38.8	5.147	10	18 23 26.02	2.3974	27 51 22.0	2.838
11	16 27 30.84	2.4951	27 4 42.5	4.976	11	18 25 49.73	2.3928	27 48 27.1	2.991
12	16 30 0.56	2.4956	27 9 35.9	4.804	12	18 28 13.16	2.3882	27 45 23.1	3.142
13	16 32 30.31	2.4960	27 14 19.0	4.632	13	18 30 36.31	2.3835	27 42 10.1	3.292
14	16 35 0.08	2.4962	27 18 51.8	4.461	14	18 32 59.18	2.3788	27 38 48.1	3.441
15	16 37 29.86	2.4963	27 23 14.3	4.289	15	18 35 21.77	2.3740	27 35 17.2	3.589
16	16 39 59.64	2.4963	27 27 26.5	4.117	16	18 37 44.06	2.3690	27 31 37.4	3.737
17	16 42 29.42	2.4963	27 31 28.3	3.944	17	18 40 6.05	2.3640	27 27 48.8	3.883
18	16 44 59.20	2.4962	27 35 19.8	3.772	18	18 42 27.74	2.3589	27 23 51.4	4.029
19	16 47 28.96	2.4958	27 39 1.0	3.601	19	18 44 49.12	2.3537	27 19 45.3	4.173
20	16 49 58.70	2.4955	27 42 31.9	3.428	20	18 47 10.19	2.3487	27 15 30.6	4.317
21	16 52 28.42	2.4950	27 45 52.4	3.256	21	18 49 30.96	2.3435	27 11 7.3	4.459
22	16 54 58.10	2.4943	27 49 2.6	3.085	22	18 51 51.41	2.3382	27 6 35.5	4.601
23	16 57 27.74	2.4935	S.27 52 2.6	2.913	23	18 54 11.54	2.3327	S.27 1 55.2	4.742
	FRIDAY 6.					**SUNDAY 8.**			
0	16 59 57.32	2.4926	S.27 54 52.2	2.741	0	18 56 31.34	2.3273	S.26 57 6.5	4.881
1	17 2 26.85	2.4917	27 57 31.5	2.570	1	18 58 50.82	2.3219	26 52 9.5	5.019
2	17 4 56.32	2.4906	28 0 0.6	2.399	2	19 1 9.97	2.3163	26 47 4.2	5.156
3	17 7 25.72	2.4894	28 2 19.4	2.228	3	19 3 28.78	2.3107	26 41 50.8	5.291
4	17 9 55.05	2.4881	28 4 27.9	2.057	4	19 5 47.26	2.3052	26 36 29.3	5.426
5	17 12 24.29	2.4866	28 6 26.2	1.886	5	19 8 5.40	2.2995	26 30 59.7	5.561
6	17 14 53.44	2.4850	28 8 14.2	1.715	6	19 10 23.20	2.2938	26 25 22.0	5.694
7	17 17 22.49	2.4833	28 9 52.0	1.546	7	19 12 40.66	2.2881	26 19 36.4	5.826
8	17 19 51.44	2.4816	28 11 19.7	1.377	8	19 14 57.77	2.2822	26 13 42.9	5.956
9	17 22 20.28	2.4797	28 12 37.2	1.208	9	19 17 14.53	2.2764	26 7 41.7	6.085
10	17 24 49.00	2.4777	28 13 44.6	1.039	10	19 19 30.94	2.2706	26 1 32.7	6.214
11	17 27 17.60	2.4755	28 14 41.9	0.870	11	19 21 47.00	2.2647	25 55 16.0	6.342
12	17 29 46.06	2.4732	28 15 29.0	0.702	12	19 24 2.70	2.2587	25 48 51.7	6.468
13	17 32 14.38	2.4708	28 16 6.1	0.535	13	19 26 18.04	2.2527	25 42 19.9	6.593
14	17 34 42.56	2.4684	28 16 33.2	0.368	14	19 28 33.03	2.2469	25 35 40.6	6.717
15	17 37 10.59	2.4658	28 16 50.2	0.201	15	19 30 47.67	2.2410	25 28 53.9	6.839
16	17 39 38.46	2.4632	28 16 57.3	- 0.035	16	19 33 1.95	2.2349	25 21 59.9	6.961
17	17 42 6.17	2.4604	28 16 54.4	+ 0.131	17	19 35 15.86	2.2288	25 14 58.6	7.082
18	17 44 33.71	2.4575	28 16 41.6	0.295	18	19 37 29.41	2.2227	25 7 50.1	7.201
19	17 47 1.07	2.4545	28 16 19.0	0.459	19	19 39 42.59	2.2167	25 0 34.5	7.319
20	17 49 28.25	2.4513	28 15 46.5	0.623	20	19 41 55.41	2.2107	24 53 11.8	7.437
21	17 51 55.23	2.4481	28 15 4.2	0.786	21	19 44 7.87	2.2046	24 45 42.1	7.553
22	17 54 22.02	2.4448	28 14 12.2	0.948	22	19 46 19.96	2.1984	24 38 5.5	7.667
23	17 56 48.61	2.4414	28 13 10.4	1.111	23	19 48 31.68	2.1923	24 30 22.0	7.781
24	17 59 14.99	2.4379	S.28 11 58.9	1.272	24	19 50 43.04	2.1862	S.24 22 31.8	7.893

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.
	MONDAY 9.					WEDNESDAY 11.		
	h m s	s	° ′ ″	″		h m s	s	° ′ ″
0	19 50 43.04	2.1862	S.24 22 31.8	7.893	0	21 28 54.05	1.9168	S.16 15 38.8
1	19 52 54.03	2.1801	24 14 34.9	8.004	1	21 30 48.92	1.9122	16 3 38.6
2	19 55 4.65	2.1740	24 6 31.3	8.115	2	21 32 43.51	1.9076	15 51 34.8
3	19 57 14.91	2.1679	23 58 21.1	8.224	3	21 34 37.83	1.9031	15 39 27.5
4	19 59 24.80	2.1617	23 50 4.4	8.332	4	21 36 31.88	1.8986	15 27 16.8
5	20 1 34.32	2.1557	23 41 41.3	8.438	5	21 38 25.66	1.8941	15 15 2.8
6	20 3 43.48	2.1496	23 33 11.9	8.543	6	21 40 19.17	1.8897	15 2 45.5
7	20 5 52.27	2.1434	23 24 36.2	8.648	7	21 42 12.43	1.8855	14 50 25.0
8	20 8 0.69	2.1373	23 15 54.2	8.751	8	21 44 5.43	1.8812	14 38 1.3
9	20 10 8.75	2.1313	23 7 6.1	8.853	9	21 45 58.17	1.8769	14 25 34.5
10	20 12 16.45	2.1252	22 58 11.9	8.954	10	21 47 50.66	1.8728	14 13 4.6
11	20 14 23.78	2.1192	22 49 11.6	9.054	11	21 49 42.91	1.8688	14 0 31.7
12	20 16 30.75	2.1131	22 40 5.4	9.152	12	21 51 34.92	1.8648	13 47 55.8
13	20 18 37.35	2.1071	22 30 53.3	9.250	13	21 53 26.69	1.8608	13 35 17.0
14	20 20 43.60	2.1012	22 21 35.4	9.346	14	21 55 18.22	1.8569	13 22 35.4
15	20 22 49.49	2.0952	22 12 11.8	9.441	15	21 57 9.52	1.8531	13 9 51.1
16	20 24 55.02	2.0892	22 2 42.5	9.536	16	21 59 0.59	1.8493	12 57 4.0
17	20 27 0.19	2.0832	21 53 7.5	9.629	17	22 0 51.44	1.8456	12 44 14.2
18	20 29 5.01	2.0773	21 43 27.0	9.720	18	22 2 42.06	1.8419	12 31 21.7
19	20 31 9.47	2.0714	21 33 41.1	9.811	19	22 4 32.47	1.8383	12 18 26.7
20	20 33 13.58	2.0656	21 23 49.7	9.901	20	22 6 22.66	1.8347	12 5 29.2
21	20 35 17.34	2.0597	21 13 53.0	9.989	21	22 8 12.64	1.8312	11 52 29.2
22	20 37 20.75	2.0539	21 3 51.0	10.077	22	22 10 2.41	1.8278	11 39 26.8
23	20 39 23.81	2.0481	S.20 53 43.8	10.163	23	22 11 51.98	1.8245	S.11 26 22.0
	TUESDAY 10.					THURSDAY 12.		
0	20 41 26.52	2.0423	S.20 43 31.4	10.249	0	22 13 41.35	1.8212	S.11 13 14.9
1	20 43 28.89	2.0367	20 33 13.9	10.333	1	22 15 30.52	1.8179	11 0 5.6
2	20 45 30.92	2.0310	20 22 51.5	10.415	2	22 17 19.50	1.8148	10 46 54.0
3	20 47 32.61	2.0253	20 12 24.1	10.497	3	22 19 8.30	1.8117	10 33 40.3
4	20 49 33.96	2.0197	20 1 51.8	10.578	4	22 20 56.91	1.8087	10 20 24.5
5	20 51 34.98	2.0142	19 51 14.7	10.657	5	22 22 45.34	1.8057	10 7 6.6
6	20 53 35.67	2.0087	19 40 32.9	10.736	6	22 24 33.59	1.8027	9 53 46.8
7	20 55 36.03	2.0032	19 29 46.4	10.814	7	22 26 21.66	1.7998	9 40 25.0
8	20 57 36.06	1.9977	19 18 55.2	10.891	8	22 28 9.57	1.7971	9 27 1.3
9	20 59 35.76	1.9923	19 7 59.5	10.966	9	22 29 57.31	1.7943	9 13 35.7
10	21 1 35.14	1.9870	18 56 59.3	11.041	10	22 31 44.89	1.7917	9 0 8.3
11	21 3 34.20	1.9817	18 45 54.6	11.114	11	22 33 32.31	1.7891	8 46 39.2
12	21 5 32.94	1.9764	18 34 45.6	11.186	12	22 35 19.58	1.7866	8 33 8.4
13	21 7 31.37	1.9712	18 23 32.3	11.257	13	22 37 6.70	1.7841	8 19 35.9
14	21 9 29.48	1.9659	18 12 14.7	11.328	14	22 38 53.67	1.7816	8 6 1.9
15	21 11 27.28	1.9608	18 0 52.9	11.397	15	22 40 40.49	1.7792	7 52 26.3
16	21 13 24.78	1.9557	17 49 27.0	11.466	16	22 42 27.17	1.7769	7 38 49.2
17	21 15 21.97	1.9507	17 37 57.0	11.532	17	22 44 13.72	1.7747	7 25 10.6
18	21 17 18.86	1.9457	17 26 23.1	11.598	18	22 46 0.14	1.7726	7 11 30.6
19	21 19 15.45	1.9407	17 14 45.2	11.664	19	22 47 46.43	1.7705	6 57 49.2
20	21 21 11.75	1.9358	17 3 3.4	11.727	20	22 49 32.60	1.7684	6 44 6.6
21	21 23 7.75	1.9310	16 51 17.9	11.790	21	22 51 18.64	1.7664	6 30 22.7
22	21 25 3.47	1.9262	16 39 28.6	11.853	22	22 53 4.57	1.7646	6 16 37.5
23	21 26 58.90	1.9215	16 27 35.5	11.915	23	22 54 50.39	1.7627	6 2 51.2
24	21 28 54.05	1.9168	S.16 15 38.8	11.974	24	22 56 36.10	1.7609	S. 5 49 3.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 13.					**SUNDAY 15.**			
h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
22 56 36.10	1.7609	S. 5 49 3.8	13.799	0	0 20 18.83	1.7519	N. 5 19 51.7	13.782
22 58 21.70	1.7592	5 35 15.3	13.817	1	0 22 3.99	1.7533	5 33 38.1	13.763
23 0 7.21	1.7576	5 21 25.7	13.834	2	0 23 49.23	1.7547	5 47 23.3	13.744
23 1 52.62	1.7560	5 7 35.2	13.849	3	0 25 34.56	1.7562	6 1 7.4	13.725
23 3 37.93	1.7545	4 53 43.8	13.864	4	0 27 19.98	1.7578	6 14 50.3	13.703
23 5 23.16	1.7531	4 39 51.5	13.879	5	0 29 5.50	1.7595	6 28 31.8	13.681
23 7 8.30	1.7517	4 25 58.3	13.893	6	0 30 51.12	1.7613	6 42 12.0	13.658
23 8 53.36	1.7503	4 12 4.3	13.906	7	0 32 36.85	1.7631	6 55 50.8	13.635
23 10 38.34	1.7491	3 58 9.6	13.918	8	0 34 22.69	1.7649	7 9 28.2	13.612
23 12 23.25	1.7479	3 44 14.2	13.929	9	0 36 8.63	1.7667	7 23 4.2	13.586
23 14 8.09	1.7467	3 30 18.1	13.940	10	0 37 54.69	1.7687	7 36 38.6	13.560
23 15 52.86	1.7457	3 16 21.4	13.950	11	0 39 40.87	1.7707	7 50 11.4	13.534
23 17 37.57	1.7447	3 2 24.1	13.959	12	0 41 27.18	1.7728	8 3 42.7	13.507
23 19 22.22	1.7437	2 48 26.3	13.967	13	0 43 13.61	1.7749	8 17 12.3	13.479
23 21 6.82	1.7429	2 34 28.1	13.974	14	0 45 0.17	1.7772	8 30 40.2	13.450
23 22 51.37	1.7422	2 20 29.4	13.981	15	0 46 46.87	1.7795	8 44 6.3	13.420
23 24 35.88	1.7414	2 6 30.3	13.987	16	0 48 33.71	1.7818	8 57 30.6	13.389
23 26 20.34	1.7407	1 52 30.9	13.992	17	0 50 20.69	1.7843	9 10 53.0	13.358
23 28 4.76	1.7401	1 38 31.3	13.996	18	0 52 7.81	1.7867	9 24 13.6	13.327
23 29 49.15	1.7396	1 24 31.4	14.000	19	0 53 55.09	1.7892	9 37 32.2	13.294
23 31 33.51	1.7391	1 10 31.3	14.003	20	0 55 42.52	1.7917	9 50 48.9	13.261
23 33 17.84	1.7387	0 56 31.0	14.006	21	0 57 30.10	1.7943	10 4 3.5	13.226
23 35 2.15	1.7383	0 42 30.6	14.007	22	0 59 17.84	1.7971	10 17 16.0	13.191
23 36 46.44	1.7380	S. 0 28 30.2	14.008	23	1 1 5.75	1.7999	N. 10 30 26.4	13.155
SATURDAY 14.					**MONDAY 16.**			
23 38 30.71	1.7378	S. 0 14 29.7	14.008	0	1 2 53.83	028	N. 10 43 34.6	13.118
23 40 14.97	1.7377	S. 0 0 29.2	14.007	1	1 4 42.08	1.8057	10 56 40.6	13.081
23 41 59.23	1.7376	N. 0 13 31.2	14.006	2	1 6 30.51	1.8086	11 9 44.3	13.042
23 43 43.48	1.7375	0 27 31.5	14.003	3	1 8 19.11	1.8116	11 22 45.6	13.002
23 45 27.73	1.7376	0 41 31.6	14.000	4	1 10 7.90	1.8147	11 35 44.5	12.962
23 47 11.99	1.7377	0 55 31.5	13.997	5	1 11 56.88	1.8178	11 48 41.1	12.922
23 48 56.25	1.7378	1 9 31.2	13.992	6	1 13 46.04	1.8210	12 1 35.2	12.880
23 50 40.52	1.7380	1 23 30.6	13.987	7	1 15 35.40	1.8243	12 14 26.7	12.837
23 52 24.81	1.7384	1 37 29.6	13.981	8	1 17 24.96	1.8276	12 27 15.7	12.794
23 54 9.13	1.7388	1 51 28.3	13.974	9	1 19 14.71	1.8309	12 40 2.0	12.749
23 55 53.47	1.7392	2 5 26.5	13.966	10	1 21 4.67	1.8344	12 52 45.6	12.704
23 57 37.84	1.7397	2 19 24.2	13.958	11	1 22 54.84	1.8379	13 5 26.5	12.659
23 59 22.23	1.7402	2 33 21.5	13.950	12	1 24 45.22	1.8415	13 18 4.7	12.612
0 1 6.66	1.7408	2 47 18.2	13.940	13	1 26 35.82	1.8451	13 30 40.0	12.564
0 2 51.13	1.7415	3 1 14.3	13.929	14	1 28 26.63	1.8487	13 43 12.4	12.516
0 4 35.64	1.7422	3 15 9.7	13.918	15	1 30 17.66	1.8523	13 55 41.9	12.467
0 6 20.20	1.7431	3 29 4.4	13.906	16	1 32 8.91	1.8562	14 8 8.4	12.417
0 8 4.81	1.7440	3 42 58.4	13.893	17	1 34 0.40	1.8601	14 20 31.9	12.365
0 9 49.48	1.7449	3 56 51.6	13.880	18	1 35 52.12	1.8640	14 32 52.2	12.313
0 11 34.20	1.7459	4 10 44.0	13.866	19	1 37 44.08	1.8679	14 45 9.4	12.260
0 13 18.99	1.7470	4 24 35.5	13.850	20	1 39 36.27	1.8718	14 57 23.4	12.206
0 15 3.84	1.7481	4 38 26.0	13.834	21	1 41 28.70	1.8759	15 9 34.1	12.152
0 16 48.76	1.7493	4 52 15.6	13.818	22	1 43 21.38	1.8801	15 21 41.5	12.096
0 18 33.76	1.7506	5 6 4.2	13.801	23	1 45 14.31	1.8843	15 33 45.6	12.040
0 20 18.83	1.7519	N. 5 19 51.7	13.782	24	1 47 7.49	1.8885	N. 15 45 46.3	11.982

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 47 7.49	1.8885	N.15 45 46.3	11.982
1	1 49 0.93	1.8928	15 57 43.5	11.924
2	1 50 54.63	1.8971	16 9 37.2	11.865
3	1 52 48.58	1.9014	16 21 27.3	11.804
4	1 54 42.79	1.9058	16 33 13.7	11.743
5	1 56 37.28	1.9104	16 44 56.5	11.681
6	1 58 32.04	1.9149	16 56 35.5	11.618
7	2 0 27.07	1.9195	17 8 10.7	11.555
8	2 2 22.38	1.9242	17 19 42.1	11.491
9	2 4 17.97	1.9288	17 31 9.6	11.425
10	2 6 13.84	1.9336	17 42 33.1	11.358
11	2 8 10.00	1.9383	17 53 52.6	11.290
12	2 10 6.44	1.9431	18 5 7.9	11.221
13	2 12 3.17	1.9480	18 16 19.1	11.152
14	2 14 0.20	1.9530	18 27 26.1	11.082
15	2 15 57.53	1.9579	18 38 28.9	11.011
16	2 17 55.15	1.9628	18 49 27.4	10.938
17	2 19 53.07	1.9679	19 0 21.5	10.864
18	2 21 51.30	1.9730	19 11 11.1	10.789
19	2 23 49.83	1.9781	19 21 56.2	10.714
20	2 25 48.67	1.9833	19 32 36.8	10.638
21	2 27 47.83	1.9886	19 43 12.8	10.561
22	2 29 47.30	1.9938	19 53 44.1	10.482
23	2 31 47.08	1.9990	N.20 4 10.7	10.402

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 33 47.18	2.0043	N.20 14 32.4	10.322
1	2 35 47.60	2.0097	20 24 49.3	10.241
2	2 37 48.35	2.0152	20 35 1.3	10.159
3	2 39 49.42	2.0206	20 45 8.4	10.077
4	2 41 50.82	2.0260	20 55 10.5	9.992
5	2 43 52.54	2.0314	21 5 7.4	9.905
6	2 45 54.59	2.0370	21 14 59.1	9.818
7	2 47 56.98	2.0426	21 24 45.6	9.731
8	2 49 59.70	2.0481	21 34 26.9	9.643
9	2 52 2.75	2.0537	21 44 2.8	9.553
10	2 54 6.14	2.0593	21 53 33.2	9.462
11	2 56 9.87	2.0650	22 2 58.2	9.371
12	2 58 13.94	2.0707	22 12 17.7	9.278
13	3 0 18.35	2.0763	22 21 31.6	9.184
14	3 2 23.10	2.0821	22 30 39.8	9.089
15	3 4 28.20	2.0878	22 39 42.3	8.993
16	3 6 33.64	2.0936	22 48 39.0	8.896
17	3 8 39.43	2.0994	22 57 29.8	8.798
18	3 10 45.57	2.1052	23 6 14.8	8.700
19	3 12 52.05	2.1109	23 14 53.8	8.599
20	3 14 58.88	2.1167	23 23 26.7	8.497
21	3 17 6.06	2.1226	23 31 53.5	8.395
22	3 19 13.59	2.1284	23 40 14.1	8.292
23	3 21 21.47	2.1342	23 48 28.5	8.187
24	3 23 29.69	2.1400	N.23 56 36.6	8.082

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 23 29.69	2.1400	N.23 56 36.6	8.082
1	3 25 38.27	2.1459	24 4 38.3	7.975
2	3 27 47.20	2.1517	24 12 33.6	7.867
3	3 29 56.48	2.1576	24 20 22.4	7.759
4	3 32 6.11	2.1634	24 28 4.7	7.649
5	3 34 16.09	2.1692	24 35 40.3	7.538
6	3 36 26.42	2.1751	24 43 9.2	7.426
7	3 38 37.10	2.1809	24 50 31.4	7.312
8	3 40 48.13	2.1867	24 57 46.7	7.197
9	3 42 59.51	2.1926	25 4 55.1	7.082
10	3 45 11.24	2.1984	25 11 56.6	6.967
11	3 47 23.32	2.2042	25 18 51.1	6.849
12	3 49 35.74	2.2099	25 25 38.5	6.730
13	3 51 48.51	2.2156	25 32 18.7	6.611
14	3 54 1.62	2.2213	25 38 51.8	6.491
15	3 56 15.07	2.2271	25 45 17.6	6.369
16	3 58 28.87	2.2328	25 51 36.1	6.247
17	4 0 43.01	2.2384	25 57 47.2	6.123
18	4 2 57.48	2.2440	26 3 50.8	5.998
19	4 5 12.29	2.2497	26 9 46.9	5.872
20	4 7 27.44	2.2553	26 15 35.4	5.744
21	4 9 42.92	2.2608	26 21 16.2	5.616
22	4 11 58.74	2.2663	26 26 49.3	5.487
23	4 14 14.88	2.2718	N.26 32 14.7	5.357

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 16 31.35	2.2772	N.26 37 32.2	5.226
1	4 18 48.15	2.2826	26 42 41.8	5.094
2	4 21 5.27	2.2879	26 47 43.4	4.961
3	4 23 22.70	2.2932	26 52 37.1	4.827
4	4 25 40.45	2.2984	26 57 22.7	4.692
5	4 27 58.51	2.3037	27 2 0.1	4.555
6	4 30 16.89	2.3089	27 6 29.3	4.418
7	4 32 35.58	2.3139	27 10 50.3	4.280
8	4 34 54.56	2.3188	27 15 2.9	4.140
9	4 37 13.84	2.3238	27 19 7.1	4.000
10	4 39 33.42	2.3288	27 23 2.9	3.860
11	4 41 53.30	2.3337	27 26 50.3	3.718
12	4 44 13.47	2.3385	27 30 29.1	3.575
13	4 46 33.92	2.3432	27 33 59.3	3.432
14	4 48 54.65	2.3479	27 37 20.9	3.287
15	4 51 15.67	2.3526	27 40 33.8	3.142
16	4 53 36.96	2.3571	27 43 37.9	2.99
17	4 55 58.52	2.3615	27 46 33.2	2.84
18	4 58 20.34	2.3658	27 49 19.6	2.699
19	5 0 42.42	2.3702	27 51 57.1	2.551
20	5 3 4.76	2.3744	27 54 25.7	2.401
21	5 5 27.35	2.3786	27 56 45.2	2.25
22	5 7 50.19	2.3827	27 58 55.7	2.09
23	5 10 13.27	2.3866	28 0 57.1	1.94
24	5 12 36.58	2.3904	N.28 2 49.3	1.79

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.			
h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
5 12 36.58	2.3904	N.28 2 49.3	1.793	0	7 9 59.28	2.4607	N.26 22 31.3	6.076
5 15 0.12	2.3943	28 4 32.3	1.639	1	7 12 26.89	2.4596	26 16 21.8	6.242
5 17 23.90	2.3981	28 6 6.0	1.485	2	7 14 54.43	2.4585	26 10 2.3	6.407
5 19 47.90	2.4017	28 7 30.5	1.330	3	7 17 21.91	2.4574	26 3 32.9	6.572
5 22 12.11	2.4052	28 8 45.6	1.174	4	7 19 49.32	2.4561	25 56 53.6	6.737
5 24 36.53	2.4087	28 9 51.4	1.018	5	7 22 16.64	2.4547	25 50 4.4	6.902
5 27 1.15	2.4120	28 10 47.8	0.861	6	7 24 43.88	2.4532	25 43 5.4	7.065
5 29 25.97	2.4153	28 11 34.7	0.703	7	7 27 11.03	2.4517	25 35 56.6	7.228
5 31 50.98	2.4185	28 12 12.1	0.544	8	7 29 38.09	2.4502	25 28 38.0	7.391
5 34 16.19	2.4217	28 12 40.0	0.385	9	7 32 5.05	2.4485	25 21 9.6	7.554
5 36 41.58	2.4246	28 12 58.3	0.225	10	7 34 31.91	2.4467	25 13 31.5	7.716
5 39 7.14	2.4274	28 13 7.0	+ 0.065	11	7 36 58.66	2.4449	25 5 43.7	7.877
5 41 32.87	2.4302	28 13 6.1	− 0.096	12	7 39 25.30	2.4431	24 57 46.2	8.038
5 43 58.77	2.4329	28 12 55.5	0.257	13	7 41 51.83	2.4411	24 49 39.1	8.198
5 46 24.82	2.4354	28 12 35.2	0.419	14	7 44 18.23	2.4390	24 41 22.4	8.358
5 48 51.02	2.4378	28 12 5.2	0.582	15	7 46 44.51	2.4369	24 32 56.1	8.517
5 51 17.36	2.4402	28 11 25.4	0.745	16	7 49 10.66	2.4348	24 24 20.3	8.676
5 53 43.85	2.4426	28 10 35.8	0.908	17	7 51 36.68	2.4326	24 15 35.0	8.833
5 56 10.47	2.4447	28 9 36.4	1.072	18	7 54 2.57	2.4303	24 6 40.3	8.990
5 58 37.21	2.4467	28 8 27.1	1.237	19	7 56 28.32	2.4279	23 57 36.2	9.146
6 1 4.08	2.4487	28 7 8.0	1.401	20	7 58 53.92	2.4255	23 48 22.8	9.302
6 3 31.06	2.4505	28 5 39.0	1.566	21	8 1 19.38	2.4232	23 39 0.0	9.457
6 5 58.14	2.4522	28 4 0.1	1.732	22	8 3 44.70	2.4207	23 29 28.0	9.610
6 8 25.33	2.4539	N.28 2 11.2	1.897	23	8 6 9.86	2.4181	N.23 19 46.8	9.763
SUNDAY 22.					TUESDAY 24.			
6 10 52.61	2.4554	N.28 0 12.4	2.063	0	8 8 34.87	2.4156	N.23 9 56.4	9.916
6 13 19.98	2.4568	27 58 3.6	2.230	1	8 10 59.73	2.4129	22 59 56.9	10.067
6 15 47.43	2.4582	27 55 44.8	2.396	2	8 13 24.42	2.4102	22 49 48.3	10.217
6 18 14.96	2.4594	27 53 16.1	2.563	3	8 15 48.95	2.4075	22 39 30.8	10.367
6 20 42.56	2.4605	27 50 37.3	2.730	4	8 18 13.32	2.4047	22 29 4.3	10.516
6 23 10.22	2.4614	27 47 48.5	2.897	5	8 20 37.52	2.4020	22 18 28.9	10.663
6 25 37.93	2.4623	27 44 49.6	3.065	6	8 23 1.56	2.3992	22 7 44.7	10.810
6 28 5.70	2.4632	27 41 40.7	3.232	7	8 25 25.43	2.3964	21 56 51.7	10.956
6 30 33.51	2.4638	27 38 21.8	3.399	8	8 27 49.13	2.3935	21 45 50.0	11.101
6 33 1.35	2.4643	27 34 52.8	3.567	9	8 30 12.65	2.3906	21 34 39.6	11.245
6 35 29.22	2.4648	27 31 13.7	3.735	10	8 32 36.00	2.3877	21 23 20.6	11.387
6 37 57.12	2.4652	27 27 24.6	3.903	11	8 34 59.17	2.3847	21 11 53.1	11.528
6 40 25.04	2.4654	27 23 25.4	4.071	12	8 37 22.17	2.3818	21 0 17.2	11.669
6 42 52.97	2.4656	27 19 16.1	4.238	13	8 39 44.99	2.3788	20 48 32.8	11.809
6 45 20.91	2.4656	27 14 56.8	4.406	14	8 42 7.63	2.3758	20 36 40.1	11.947
6 47 48.84	2.4655	27 10 27.4	4.574	15	8 44 30.09	2.3728	20 24 39.2	12.084
6 50 16.77	2.4654	27 5 47.9	4.742	16	8 46 52.37	2.3698	20 12 30.1	12.220
6 52 44.69	2.4652	27 0 58.4	4.909	17	8 49 14.47	2.3668	20 0 12.8	12.355
6 55 12.59	2.4648	26 55 58.9	5.076	18	8 51 36.39	2.3638	19 47 47.5	12.488
6 57 40.46	2.4643	26 50 49.3	5.243	19	8 53 58.13	2.3607	19 35 14.2	12.621
7 0 8.31	2.4638	26 45 29.7	5.410	20	8 56 19.68	2.3577	19 22 33.0	12.752
7 2 36.12	2.4632	26 40 0.1	5.577	21	8 58 41.05	2.3547	19 9 43.9	12.882
7 5 3.89	2.4624	26 34 20.5	5.743	22	9 1 2.24	2.3517	18 56 47.1	13.011
7 7 31.61	2.4616	26 28 30.9	5.910	23	9 3 23.25	2.3487	18 43 42.6	13.138
7 9 59.28	2.4607	N.26 22 31.3	6.076	24	9 5 44.08	2.3456	N.18 30 30.5	13.264

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 5 44.08	2.3456	N.18 30 30.5	13.264
1	9 8 4.72	2.3426	18 17 10.9	13.389
2	9 10 25.19	2.3397	18 3 43.8	13.513
3	9 12 45.48	2.3367	17 50 9.3	13.635
4	9 15 5.59	2.3337	17 36 27.6	13.755
5	9 17 25.52	2.3307	17 22 38.7	13.875
6	9 19 45.28	2.3278	17 8 42.6	13.993
7	9 22 4.86	2.3249	16 54 39.5	14.109
8	9 24 24.27	2.3220	16 40 29.5	14.224
9	9 26 43.50	2.3191	16 26 12.6	14.338
10	9 29 2.56	2.3163	16 11 48.9	14.451
11	9 31 21.45	2.3135	15 57 18.5	14.562
12	9 33 40.18	2.3107	15 42 41.5	14.671
13	9 35 58.74	2.3079	15 27 58.0	14.778
14	9 38 17.13	2.3052	15 13 8.1	14.885
15	9 40 35.36	2.3025	14 58 11.8	14.990
16	9 42 53.43	2.2999	14 43 9.3	15.093
17	9 45 11.35	2.2973	14 28 0.7	15.194
18	9 47 29.11	2.2947	14 12 46.0	15.294
19	9 49 46.71	2.2922	13 57 25.4	15.392
20	9 52 4.17	2.2897	13 41 58.9	15.490
21	9 54 21.48	2.2872	13 26 26.6	15.586
22	9 56 38.64	2.2848	13 10 48.6	15.679
23	9 58 55.66	2.2825	N.12 55 5.1	15.771

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 1 12.54	2.2802	N.12 39 16.1	15.862
1	10 3 29.28	2.2779	12 23 21.7	15.950
2	10 5 45.89	2.2757	12 7 22.1	16.037
3	10 8 2.36	2.2735	11 51 17.3	16.122
4	10 10 18.71	2.2715	11 35 7.5	16.205
5	10 12 34.94	2.2694	11 18 52.7	16.287
6	10 14 51.04	2.2674	11 2 33.0	16.367
7	10 17 7.03	2.2655	10 46 8.6	16.446
8	10 19 22.90	2.2636	10 29 39.5	16.522
9	10 21 38.66	2.2617	10 13 5.9	16.597
10	10 23 54.31	2.2600	9 56 27.9	16.670
11	10 26 9.86	2.2583	9 39 45.5	16.742
12	10 28 25.31	2.2567	9 22 58.9	16.811
13	10 30 40.66	2.2551	9 6 8.2	16.878
14	10 32 55.92	2.2536	8 49 13.5	16.945
15	10 35 11.09	2.2521	8 32 14.8	17.009
16	10 37 26.17	2.2508	8 15 12.4	17.071
17	10 39 41.18	2.2495	7 58 6.3	17.131
18	10 41 56.11	2.2482	7 40 56.7	17.189
19	10 44 10.96	2.2470	7 23 43.6	17.246
20	10 46 25.75	2.2459	7 6 27.2	17.301
21	10 48 40.47	2.2448	6 49 7.5	17.354
22	10 50 55.13	2.2439	6 31 44.7	17.404
23	10 53 9.74	2.2430	6 14 19.0	17.453
24	10 55 24.29	2.2422	N. 5 56 50.4	17.500

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.
	h m s	s	° ′ ″
0	10 55 24.29	2.2422	N. 5 56 50.4
1	10 57 38.80	2.2415	5 39 19.0
2	10 59 53.27	2.2408	5 21 45.0
3	11 2 7.69	2.2401	5 4 8.4
4	11 4 22.08	2.2396	4 46 29.4
5	11 6 36.44	2.2392	4 28 48.1
6	11 8 50.78	2.2388	4 11 4.7
7	11 11 5.10	2.2385	3 53 19.2
8	11 13 19.40	2.2382	3 35 31.8
9	11 15 33.69	2.2381	3 17 42.5
10	11 17 47.97	2.2380	2 59 51.5
11	11 20 2.25	2.2380	2 41 59.0
12	11 22 16.53	2.2381	2 24 5.0
13	11 24 30.82	2.2382	2 6 9.7
14	11 26 45.12	2.2385	1 48 13.2
15	11 28 59.44	2.2388	1 30 15.6
16	11 31 13.78	2.2392	1 12 17.0
17	11 33 28.14	2.2396	0 54 17.6
18	11 35 42.53	2.2402	0 36 17.5
19	11 37 56.96	2.2408	0 18 16.8
20	11 40 11.43	2.2415	N. 0 0 15.6
21	11 42 25.94	2.2423	S. 0 17 45.9
22	11 44 40.50	2.2432	0 35 47.6
23	11 46 55.12	2.2441	S. 0 53 49.4

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.
0	11 49 9.79	2.2451	S. 1 11 51.2
1	11 51 24.53	2.2462	1 29 52.8
2	11 53 39.33	2.2473	1 47 54.1
3	11 55 54.20	2.2485	2 5 55.0
4	11 58 9.15	2.2499	2 23 55.3
5	12 0 24.19	2.2513	2 41 55.0
6	12 2 39.31	2.2527	2 59 53.9
7	12 4 54.52	2.2543	3 17 51.9
8	12 7 9.83	2.2560	3 35 48.8
9	12 9 25.24	2.2577	3 53 44.5
10	12 11 40.75	2.2594	4 11 38.9
11	12 13 56.37	2.2613	4 29 31.9
12	12 16 12.11	2.2633	4 47 23.4
13	12 18 27.97	2.2653	5 5 13.1
14	12 20 43.95	2.2673	5 23 1.0
15	12 23 0.05	2.2694	5 40 47.0
16	12 25 16.28	2.2717	5 58 30.9
17	12 27 32.65	2.2740	6 16 12.6
18	12 29 49.16	2.2764	6 33 52.0
19	12 32 5.82	2.2788	6 51 28.9
20	12 34 22.62	2.2812	7 9 3.2
21	12 36 39.57	2.2838	7 26 34.8
22	12 38 56.68	2.2865	7 44 3.5
23	12 41 13.95	2.2893	8 1 29.3
24	12 43 31.39	2.2921	S. 8 18 52.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 43 31.39	2.2921	S. 8 18 52.0	17.351
1	12 45 49.00	2.2949	8 36 11.4	17.296
2	12 48 6.78	2.2977	8 53 27.5	17.239
3	12 50 24.73	2.3007	9 10 40.1	17.180
4	12 52 42.86	2.3037	9 27 49.1	17.118
5	12 55 1.18	2.3068	9 44 54.3	17.055
6	12 57 19.68	2.3099	10 1 55.7	16.990
7	12 59 38.37	2.3132	10 18 53.1	16.922
8	13 1 57.26	2.3165	10 35 46.4	16.852
9	13 4 16.35	2.3198	10 52 35.4	16.781
10	13 6 35.64	2.3232	11 9 20.1	16.707
11	13 8 55.13	2.3266	11 26 0.2	16.630
12	13 11 14.83	2.3301	11 42 35.7	16.552
13	13 13 34.74	2.3336	11 59 6.5	16.472
14	13 15 54.86	2.3372	12 15 32.4	16.390
15	13 18 15.20	2.3408	12 31 53.3	16.306
16	13 20 35.76	2.3445	12 48 9.1	16.220
17	13 22 56.54	2.3482	13 4 19.7	16.132
18	13 25 17.54	2.3519	13 20 24.9	16.042
19	13 27 38.77	2.3557	13 36 24.7	15.949
20	13 30 0.23	2.3596	13 52 18.8	15.854
21	13 32 21.92	2.3635	14 8 7.2	15.758
22	13 34 43.85	2.3674	14 23 49.8	15.660
23	13 37 6.01	2.3713	S.14 39 26.4	15.559

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 39 28.40	2.3752	S.14 54 56.9	15.457
1	13 41 51.03	2.3792	15 10 21.2	15.353
2	13 44 13.91	2.3833	15 25 39.2	15.247
3	13 46 37.03	2.3873	15 40 50.8	15.138
4	13 49 0.39	2.3914	15 55 55.8	15.028
5	13 51 24.00	2.3955	16 10 54.2	14.917
6	13 53 47.85	2.3996	16 25 45.9	14.804
7	13 56 11.95	2.4037	16 40 30.7	14.688
8	13 58 36.29	2.4079	16 55 8.5	14.570
9	14 1 0.89	2.4121	17 9 39.1	14.450
10	14 3 25.74	2.4162	17 24 2.5	14.329
11	14 5 50.83	2.4203	17 38 18.6	14.207
12	14 8 16.17	2.4244	17 52 27.3	14.082
13	14 10 41.76	2.4287	18 6 28.4	13.955
14	14 13 7.61	2.4329	18 20 21.9	13.827
15	14 15 33.71	2.4371	18 34 7.7	13.697
16	14 18 0.06	2.4412	18 47 45.6	13.566
17	14 20 26.66	2.4453	19 1 15.6	13.432
18	14 22 53.50	2.4494	19 14 37.5	13.297
19	14 25 20.59	2.4536	19 27 51.2	13.160
20	14 27 47.93	2.4577	19 40 56.7	13.022
21	14 30 15.52	2.4618	19 53 53.9	12.882
22	14 32 43.35	2.4658	20 6 42.6	12.740
23	14 35 11.42	2.4699	20 19 22.7	12.597
24	14 37 39.74	2.4740	S.20 31 54.2	12.453

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 37 39.74	2.4740	S.20 31 54.2	12.453
1	14 40 8.30	2.4779	20 44 17.0	12.307
2	14 42 37.09	2.4818	20 56 31.0	12.158
3	14 45 6.12	2.4858	21 8 36.0	12.008
4	14 47 35.38	2.4897	21 20 32.0	11.858
5	14 50 4.88	2.4936	21 32 19.0	11.707
6	14 52 34.61	2.4973	21 43 56.8	11.553
7	14 55 4.56	2.5010	21 55 25.4	11.398
8	14 57 34.73	2.5048	22 6 44.6	11.242
9	15 0 5.13	2.5085	22 17 54.4	11.086
10	15 2 35.75	2.5120	22 28 54.7	10.926
11	15 5 6.57	2.5154	22 39 45.5	10.766
12	15 7 37.60	2.5189	22 50 26.6	10.604
13	15 10 8.84	2.5223	23 0 58.0	10.442
14	15 12 40.28	2.5257	23 11 19.6	10.278
15	15 15 11.92	2.5289	23 21 31.4	10.114
16	15 17 43.75	2.5321	23 31 33.3	9.947
17	15 20 15.77	2.5352	23 41 25.1	9.780
18	15 22 47.98	2.5383	23 51 6.9	9.612
19	15 25 20.37	2.5412	24 0 38.6	9.443
20	15 27 52.93	2.5441	24 10 0.1	9.273
21	15 30 25.66	2.5469	24 19 11.4	9.102
22	15 32 58.56	2.5496	24 28 12.4	8.930
23	15 35 31.61	2.5521	S.24 37 3.0	8.757

WEDNESDAY, APRIL 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 38 4.81	2.5546	S.24 45 43.2	8.583

PHASES OF THE MOON.

			d	h	m
☾	Last Quarter . .	March	5	23	28.9
●	New Moon		13	22	47.9
☽	First Quarter		21	23	56.7
○	Full Moon		28	17	21.5

			d	h
☾	Apogee	March	14	13.4
☾	Perigee		28	11.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon. ° ′ ″	P. L. of Diff.	IIIh. ° ′ ″	P. L. of Diff.	VIh. ° ′ ″	P. L. of Diff.	IXh. ° ′ ″	P. L of Diff.
1	Pollux	W.	73 49 22	2010	75 42 41	2017	77 35 49	2025	79 28 45	2033
	JUPITER	W.	65 14 33	1986	67 8 30	1993	69 2 15	2001	70 55 48	2009
	Regulus	W.	36 52 33	2003	38 46 3	2010	40 39 21	2018	42 32 27	2026
	Antares	E.	63 3 14	2003	61 9 45	2010	59 16 27	2018	57 23 21	2027
2	Pollux	W.	88 49 45	2085	90 41 7	2097	92 32 11	2110	94 22 55	2123
	JUPITER	W.	80 19 53	2062	82 11 51	2073	84 3 31	2086	85 54 52	2099
	Regulus	W.	51 54 18	2079	53 45 50	2090	55 37 4	2103	57 27 58	2116
	Antares	E.	48 1 34	2079	46 10 3	2092	44 18 51	2104	42 27 58	2117
	MARS	E.	99 2 9	2306	97 16 18	2319	95 30 46	2332	93 45 33	2346
	a Aquilæ	E.	100 43 41	2826	99 9 47	2831	97 35 59	2837	96 2 19	2845
3	JUPITER	W.	95 6 19	2171	96 55 30	2186	98 44 18	2202	100 32 42	2218
	Regulus	W.	66 37 17	2188	68 26 3	2204	70 14 25	2219	72 2 24	2235
	MARS	E.	85 4 38	2421	83 21 33	2437	81 38 51	2454	79 56 33	2470
	a Aquilæ	E.	88 17 18	2911	86 45 13	2928	85 13 30	2948	83 42 12	2969
	VENUS	E.	95 54 21	2569	94 14 44	2586	92 35 30	2603	90 56 39	2621
4	Regulus	W.	80 56 22	2317	82 41 56	2334	84 27 6	2351	86 11 51	2368
	Spica	W.	26 58 27	2328	28 43 45	2344	30 28 40	2360	32 13 12	2377
	MARS	E.	71 30 59	2557	69 51 5	2575	68 11 36	2593	66 32 32	2611
	a Aquilæ	E.	76 12 51	3096	74 44 37	3126	73 16 59	3158	71 49 59	3192
	VENUS	E.	82 48 23	2710	81 11 57	2729	79 35 55	2747	78 0 17	2766
5	Regulus	W.	94 49 31	2453	96 31 50	2470	98 13 46	2487	99 55 18	2503
	Spica	W.	40 50 0	2458	42 32 12	2475	44 14 0	2492	45 55 25	2508
	MARS	E.	58 23 17	2701	56 46 39	2719	55 10 24	2737	53 34 33	2755
	a Aquilæ	E.	64 45 37	3386	63 23 4	3431	62 1 23	3480	60 40 36	3529
	VENUS	E.	70 8 15	2859	68 35 3	2877	67 2 15	2895	65 29 50	2913
	SUN	E.	102 11 55	2783	100 37 5	2801	99 2 38	2819	97 28 35	2838
6	Spica	W.	54 16 52	2588	55 56 4	2604	57 34 54	2618	59 13 24	2634
	MARS	E.	45 41 4	2841	44 7 29	2858	42 34 16	2874	41 1 24	2891
	a Aquilæ	E.	54 11 28	3829	52 56 56	3902	51 43 38	3978	50 31 37	4060
	VENUS	E.	57 53 28	3002	56 23 18	3019	54 53 29	3037	53 24 2	3053
	SUN	E.	89 44 5	2925	88 12 18	2942	86 40 52	2958	85 9 47	2975
7	Spica	W.	67 20 52	2706	68 57 24	2719	70 33 38	2732	72 9 35	2746
	SATURN	W.	41 23 59	2782	42 58 50	2791	44 33 30	2800	46 7 58	2808
	VENUS	E.	46 1 47	3133	44 34 17	3148	43 7 6	3163	41 40 13	3178
	SUN	E.	77 39 26	3053	76 10 19	3069	74 41 31	3082	73 13 0	3097
8	Spica	W.	80 5 6	2807	81 39 25	2818	83 13 29	2829	84 47 19	2840
	SATURN	W.	53 57 20	2855	55 30 36	2864	57 3 41	2873	58 36 34	2882
	Antares	W.	34 11 15	2805	35 45 36	2817	37 19 42	2828	38 53 34	2838
	VENUS	E.	34 29 58	3246	33 4 43	3258	31 39 42	3270	30 14 56	3282
	SUN	E.	65 54 41	3164	64 27 49	3176	63 1 11	3188	61 34 48	3201
9	Spica	W.	92 33 7	2890	94 5 39	2898	95 38 0	2908	97 10 9	2916
	SATURN	W.	66 18 11	2925	67 49 58	2933	69 21 35	2941	70 53 2	2948
	Antares	W.	46 39 33	2888	48 12 7	2897	49 44 30	2905	51 16 42	2914
	SUN	E.	54 26 18	3255	53 1 14	3265	51 36 21	3274	50 11 39	3284

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	$\mathrm{XVIII}^{\mathrm{h}}$.	P. L. of Diff.	$\mathrm{XXI}^{\mathrm{h}}$.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Pollux	W.	81 21 27	2042	83 13 55	2052	85 6 8	2062	86 58 5	2073
	JUPITER	W.	72 49 8	2019	74 42 13	2028	76 35 3	2039	78 27 37	2050
	Regulus	W.	44 25 20	2036	46 17 58	2046	48 10 21	2056	50 2 28	2067
	Antares	E.	55 30 29	2036	53 37 51	2046	51 45 29	2057	49 53 23	2068
2	Pollux	W.	96 13 19	2136	98 3 23	2151	99 53 5	2165	101 42 25	2180
	JUPITER	W.	87 45 52	2113	89 36 31	2127	91 26 49	2141	93 16 45	2156
	Regulus	W.	59 18 32	2130	61 8 46	2144	62 58 38	2158	64 48 9	2173
	Antares	E.	40 37 25	2131	38 47 13	2145	36 57 22	2159	35 7 53	2174
	MARS	E.	92 0 40	2360	90 16 8	2374	88 31 56	2389	86 48 6	2405
	α Aquilæ	E.	94 28 49	2855	92 55 32	2866	91 22 30	2880	89 49 45	2894
3	JUPITER	W.	102 20 43	2235	104 8 19	2251	105 55 31	2268	107 42 18	2284
	Regulus	W.	73 50 0	2251	75 37 12	2267	77 24 0	2284	79 10 23	2300
	MARS	E.	78 14 38	2487	76 33 7	2504	74 52 0	2522	73 11 17	2540
	α Aquilæ	E.	82 11 20	2992	80 40 57	3015	79 11 3	3040	77 41 40	3068
	VENUS	E.	89 18 12	2638	87 40 9	2655	86 2 29	2674	84 25 14	2692
4	Regulus	W.	87 56 12	2385	89 40 8	2402	91 23 40	2419	93 6 48	2436
	Spica	W.	33 57 20	2393	35 41 5	2409	37 24 27	2426	39 7 25	2442
	MARS	E.	64 53 52	2629	63 15 37	2647	61 37 46	2665	60 0 19	2684
	α Aquilæ	E.	70 23 40	3226	68 58 2	3264	67 33 8	3302	66 8 59	3343
	VENUS	E.	76 25 4	2784	74 50 15	2803	73 15 51	2821	71 41 51	2840
5	Regulus	W.	101 36 27	2520	103 17 13	2536	104 57 36	2552	106 37 37	2569
	Spica	W.	47 36 27	2524	49 17 7	2540	50 57 24	2556	52 37 19	2572
	MARS	E.	51 59 6	2772	50 24 2	2789	48 49 20	2807	47 15 1	2824
	α Aquilæ	E.	59 20 44	3582	58 1 50	3639	56 43 58	3699	55 27 10	3762
	VENUS	E.	63 57 48	2931	62 26 9	2950	60 54 53	2967	59 23 59	2985
	SUN	E.	95 54 56	2855	94 21 40	2873	92 48 46	2890	91 16 14	2908
6	Spica	W.	60 51 33	2649	62 29 22	2663	64 6 51	2678	65 44 1	2692
	MARS	E.	39 28 54	2907	37 56 44	2923	36 24 54	2939	34 53 24	2954
	α Aquilæ	E.	49 20 56	4149	48 11 41	4243	47 3 55	4345	45 57 44	4456
	VENUS	E.	51 54 55	3070	50 26 9	3086	48 57 42	3102	47 29 35	3118
	SUN	E.	83 39 3	2991	82 8 39	3007	80 38 35	3023	79 8 51	3039
7	Spica	W.	73 45 14	2759	75 20 36	2771	76 55 42	2783	78 30 32	2795
	SATURN	W.	47 42 15	2818	49 16 20	2828	50 50 12	2837	52 23 52	2846
	VENUS	E.	40 13 37	3192	38 47 18	3205	37 21 15	3220	35 55 29	3232
	SUN	E.	71 44 47	3111	70 16 51	3125	68 49 12	3138	67 21 49	3151
8	Spica	W.	86 20 55	2851	87 54 17	2861	89 27 26	2870	91 0 23	2880
	SATURN	W.	60 9 16	2891	61 41 46	2900	63 14 5	2909	64 46 13	2916
	Antares	W.	40 27 12	2848	42 0 37	2859	43 33 48	2869	45 6 47	2879
	VENUS	E.	28 50 24	3294	27 26 5	3306	26 2 0	3317	24 38 8	3327
	SUN	E.	60 8 40	3212	58 42 45	3223	57 17 3	3234	55 51 34	3245
9	Spica	W.	98 42 8	2924	100 13 56	2932	101 45 34	2940	103 17 2	2947
	SATURN	W.	72 24 20	2956	73 55 28	2963	75 26 27	2970	76 57 17	2977
	Antares	W.	52 48 43	2922	54 20 34	2931	55 52 14	2938	57 23 45	2946
	SUN	E.	48 47 9	3293	47 22 49	3302	45 58 40	3310	44 34 40	3319

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
10	Spica	W.	104 48 21	2954	106 19 31	2962	107 50 32	2968	109 21 25	2975
	SATURN	W.	78 27 59	2983	79 58 33	2990	81 28 58	2997	82 59 15	3002
	Antares	W.	58 55 6	2952	60 26 19	2959	61 57 23	2965	63 28 19	2972
	SUN	E.	43 10 50	3326	41 47 9	3335	40 23 38	3342	39 0 15	3350
11	SATURN	W.	90 28 54	3030	91 58 30	3035	93 27 59	3040	94 57 22	3044
	Antares	W.	71 1 2	3001	72 31 14	3006	74 1 19	3010	75 31 19	3015
	SUN	E.	32 5 23	3383	30 42 47	3389	29 20 18	3395	27 57 56	3400
12	SATURN	W.	102 22 56	3066	103 51 47	3069	105 20 34	3073	106 49 16	3078
	Antares	W.	82 59 57	3035	84 29 26	3039	85 58 51	3043	87 28 11	3045
	SUN	E.	21 7 46	3431	19 46 4	3438	18 24 30	3445	17 3 4	3452
15	SUN	W.	11 42 5	3502	13 2 27	3494	14 22 58	3487	15 43 37	3480
	Aldebaran	E.	62 3 16	3173	60 36 34	3174	59 9 54	3177	57 43 17	3179
	Pollux	E.	104 32 37	3079	103 4 2	3079	101 35 27	3078	100 6 51	3077
16	SUN	W.	22 28 25	3458	23 49 36	3454	25 10 52	3450	26 32 12	3446
	Aldebaran	E.	50 31 3	3195	49 4 48	3199	47 38 38	3204	46 12 33	3209
	Pollux	E.	92 43 27	3070	91 14 41	3068	89 45 52	3065	88 17 0	3063
	JUPITER	E.	100 31 55	3056	99 2 52	3055	97 33 47	3052	96 4 39	3051
17	SUN	W.	33 19 57	3425	34 41 45	3421	36 3 38	3415	37 25 37	3411
	Aldebaran	E.	39 3 51	3244	37 38 34	3254	36 13 29	3266	34 48 38	3280
	Pollux	E.	80 51 50	3047	79 22 36	3043	77 53 17	3039	76 23 53	3035
	JUPITER	E.	88 38 13	3035	87 8 44	3031	85 39 10	3027	84 9 31	3023
18	SUN	W.	44 17 4	3380	45 39 43	3374	47 2 29	3366	48 25 24	3359
	Pollux	E.	68 55 28	3009	67 25 27	3004	65 55 19	2997	64 25 3	2991
	JUPITER	E.	76 39 51	2998	75 9 36	2992	73 39 13	2985	72 8 42	2980
	Regulus	E.	105 48 42	3002	104 18 32	2996	102 48 14	2989	101 17 48	2982
19	SUN	W.	55 22 14	3317	56 46 6	3306	58 10 10	3297	59 34 25	3287
	Pollux	E.	56 51 33	2954	55 20 22	2946	53 49 1	2937	52 17 29	2928
	JUPITER	E.	64 34 0	2942	63 2 34	2934	61 30 58	2925	59 59 11	2916
	Regulus	E.	93 43 22	2944	92 11 59	2935	90 40 25	2926	89 8 39	2917
20	SUN	W.	66 38 48	3230	68 4 22	3218	69 30 10	3204	70 56 14	3192
	α Arietis	W.	30 48 53	2934	32 20 29	2916	33 52 27	2901	35 24 45	2883
	Pollux	E.	44 36 53	2880	43 4 8	2869	41 31 9	2858	39 57 56	2847
	JUPITER	E.	52 17 12	2866	50 44 9	2855	49 10 52	2843	47 37 20	2831
	Regulus	E.	81 26 45	2865	79 53 41	2854	78 20 23	2842	76 46 50	2830
21	SUN	W.	78 10 35	3120	79 38 20	3105	81 6 23	3090	82 34 45	3073
	α Arietis	W.	43 11 32	2803	44 45 56	2787	46 20 41	2771	47 55 47	2754
	JUPITER	E.	39 45 46	2769	38 10 37	2756	36 35 11	2742	34 59 27	2729
	Regulus	E.	68 54 59	2764	67 19 44	2750	65 44 11	2736	64 8 19	2721
22	SUN	W.	90 1 38	2989	91 32 4	2972	93 2 52	2954	94 34 3	2936
	α Arietis	W.	55 56 49	2670	57 34 9	2652	59 11 53	2635	60 50 0	2617
	Regulus	E.	56 3 55	2643	54 25 59	2626	52 47 40	2610	51 8 59	2593
	Spica	E.	110 5 12	2646	108 27 20	2629	106 49 5	2613	105 10 28	2596

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
10	Spica	W.	110 52 9	2981	112 22 46	2987	113 53 15	2993	115 23 37	2998
	SATURN	W.	84 29 25	3008	85 59 28	3014	87 29 23	3019	88 59 12	3025
	Antares	W.	64 59 6	2978	66 29 46	2985	68 0 18	2990	69 30 43	2995
	SUN	E.	37 37 1	3357	36 13 55	3364	34 50 57	3370	33 28 6	3377
11	SATURN	W.	96 26 40	3049	97 55 52	3053	99 24 59	3058	100 54 0	3062
	Antares	W.	77 1 13	3019	78 31 2	3024	80 0 45	3028	81 30 23	3031
	SUN	E.	26 35 40	3408	25 13 32	3413	23 51 30	3419	22 29 35	3424
12	SATURN	W.	108 17 53	3081	109 46 26	3084	111 14 55	3087	112 43 20	3091
	Antares	W.	88 57 28	3048	90 26 41	3051	91 55 51	3054	93 24 57	3056
	SUN	E.	15 41 46	3461	14 20 38	3471	12 59 42	3483	11 38 59	3497
15	SUN	W.	17 4 24	3474	18 25 17	3470	19 46 15	3465	21 7 18	3462
	Aldebaran	E.	56 16 43	3183	54 50 13	3185	53 23 46	3188	51 57 22	3192
	Pollux	E.	98 38 13	3076	97 9 34	3074	95 40 53	3073	94 12 11	3072
16	SUN	W.	27 53 36	3443	29 15 4	3438	30 36 37	3434	31 58 15	3431
	Aldebaran	E.	44 46 34	3214	43 20 41	3220	41 54 56	3227	40 29 19	3235
	Pollux	E.	86 48 5	3060	85 19 7	3057	83 50 5	3055	82 21 0	3051
	JUPITER	E.	94 35 29	3047	93 6 15	3045	91 36 58	3042	90 7 37	3039
17	SUN	W.	38 47 41	3405	40 9 52	3400	41 32 9	3393	42 54 33	3387
	Aldebaran	E.	33 24 3	3296	31 59 47	3315	30 35 53	3337	29 12 24	3363
	Pollux	E.	74 54 24	3031	73 24 50	3026	71 55 9	3021	70 25 22	3015
	JUPITER	E.	82 39 47	3018	81 9 57	3014	79 40 1	3009	78 9 59	3004
18	SUN	W.	49 48 27	3351	51 11 39	3343	52 35 1	3335	53 58 32	3325
	Pollux	E.	62 54 39	2984	61 24 6	2977	59 53 25	2969	58 22 34	2962
	JUPITER	E.	70 38 4	2973	69 7 17	2965	67 36 21	2958	66 5 15	2950
	Regulus	E.	99 47 13	2976	98 16 30	2968	96 45 37	2961	95 14 35	2952
19	SUN	W.	60 58 52	3276	62 23 31	3265	63 48 23	3253	65 13 29	3242
	Pollux	E.	50 45 46	2919	49 13 51	2909	47 41 44	2900	46 9 25	2890
	JUPITER	E.	58 27 12	2906	56 55 1	2897	55 22 38	2887	53 50 2	2876
	Regulus	E.	87 36 42	2907	86 4 32	2898	84 32 10	2887	82 59 34	2876
20	SUN	W.	72 22 33	3178	73 49 8	3164	75 16 0	3150	76 43 9	3136
	α Arietis	W.	36 57 25	2867	38 30 26	2852	40 3 47	2835	41 37 29	2819
	Pollux	E.	38 24 29	2835	36 50 47	2825	35 16 51	2813	33 42 40	2801
	JUPITER	E.	46 3 33	2819	44 29 30	2808	42 55 12	2795	41 20 37	2782
	Regulus	E.	75 13 1	2818	73 38 56	2805	72 4 34	2792	70 29 55	2779
21	SUN	W.	84 3 27	3057	85 32 29	3041	87 1 51	3024	88 31 34	3007
	α Arietis	W.	49 31 15	2738	51 7 5	2721	52 43 17	2704	54 19 52	2687
	JUPITER	E.	33 23 25	2714	31 47 4	2701	30 10 25	2686	28 33 26	2672
	Regulus	E.	62 32 7	2706	60 55 35	2691	59 18 43	2675	57 41 30	2659
22	SUN	W.	96 5 36	2917	97 37 33	2899	99 9 53	2880	100 42 37	2861
	α Arietis	W.	62 28 32	2599	64 7 28	2582	65 46 48	2564	67 26 33	2546
	Regulus	E.	49 29 55	2577	47 50 28	2559	46 10 37	2542	44 30 22	2524
	Spica	E.	103 31 27	2579	101 52 3	2561	100 12 15	2544	98 32 3	2527

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Sun W.	102 15 46	2842	103 49 19	2823	105 23 17	2805	106 57 39	2785
	α Arietis W.	69 6 42	2527	70 47 17	2510	72 28 17	2491	74 9 43	2473
	Aldebaran W.	38 25 53	2701	40 2 32	2671	41 39 51	2641	43 17 50	2612
	Regulus E.	42 49 42	2506	41 8 37	2489	39 27 8	2471	37 45 14	2453
	Spica E.	96 51 27	2509	95 10 26	2491	93 29 0	2473	91 47 9	2455
24	Sun W.	114 55 53	2688	116 32 49	2669	118 10 11	2650	119 47 58	2631
	α Arietis W.	82 43 21	2381	84 27 23	2363	86 11 51	2345	87 56 45	2326
	Aldebaran W.	51 37 4	2484	53 18 40	2461	55 0 48	2438	56 43 29	2416
	Spica E.	83 11 31	2364	81 27 5	2347	79 42 14	2328	77 56 56	2311
	Saturn E.	109 0 45	2391	107 16 57	2372	105 32 42	2353	103 48 0	2335
25	α Arietis W.	96 47 43	2241	98 35 10	2225	100 23 1	2208	102 11 17	2192
	Aldebaran W.	65 24 36	2312	67 10 18	2294	68 56 27	2275	70 43 3	2257
	Spica E.	69 4 0	2225	67 16 9	2208	65 27 53	2192	63 39 13	2175
	Saturn E.	94 57 53	2246	93 10 34	2229	91 22 50	2213	89 34 42	2197
26	Aldebaran W.	79 42 26	2176	81 31 29	2162	83 20 54	2149	85 10 39	2136
	Pollux W.	36 35 52	2116	38 26 26	2102	40 17 22	2088	42 8 40	2075
	Jupiter W.	28 51 19	2113	30 41 58	2099	32 32 59	2085	34 24 21	2072
	Spica E.	54 30 2	2103	52 39 7	2089	50 47 51	2076	48 56 15	2064
	Saturn E.	80 28 14	2124	78 37 52	2111	76 47 10	2099	74 56 9	2087
	Antares E.	100 22 30	2099	98 31 29	2086	96 40 8	2073	94 48 27	2060
27	Aldebaran W.	94 23 51	2084	96 15 15	2076	98 6 51	2069	99 58 38	2062
	Pollux W.	51 29 56	2019	53 23 1	2009	55 16 21	2001	57 9 54	1994
	Jupiter W.	43 45 58	2016	45 39 7	2008	47 32 29	2000	49 26 4	1993
	Saturn E.	65 36 58	2040	63 44 26	2033	61 51 44	2026	59 58 52	2023
	Antares E.	85 25 31	2008	83 32 9	1999	81 38 33	1992	79 44 46	1984
28	Pollux W.	66 40 8	1968	68 34 32	1966	70 29 0	1964	72 23 31	1963
	Jupiter W.	58 56 25	1968	60 50 50	1965	62 45 19	1964	64 39 50	1963
	Regulus W.	29 42 32	1960	31 37 9	1958	33 31 50	1956	35 26 33	1956
	Saturn E.	50 33 5	2012	48 39 49	2014	46 46 36	2016	44 53 27	2021
	Antares E.	70 13 25	1961	68 18 49	1958	66 24 9	1956	64 29 26	1956
29	Pollux W.	81 56 2	1971	83 50 22	1975	85 44 35	1980	87 38 41	1986
	Jupiter W.	74 12 20	1972	76 6 39	1976	78 0 51	1981	79 54 56	1987
	Regulus W.	45 0 0	1964	46 54 31	1968	48 48 55	1973	50 43 12	1979
	Antares E.	54 56 1	1965	53 1 31	1968	51 7 7	1974	49 12 51	1979
	α Aquilæ E.	106 29 31	2750	104 53 57	2739	103 18 9	2732	101 42 12	2727
30	Pollux W.	97 6 32	2026	98 59 26	2035	100 52 5	2046	102 44 27	2058
	Jupiter W.	89 22 39	2027	91 15 31	2037	93 8 8	2048	95 0 28	2059
	Regulus W.	60 11 59	2018	62 5 5	2028	63 57 55	2039	65 50 28	2051
	α Aquilæ E.	93 41 52	2738	92 6 2	2745	90 30 22	2756	88 54 56	2769
	Mars E.	111 49 2	2842	110 1 37	2852	108 14 27	2864	106 27 34	2875
31	Regulus W.	75 8 29	2116	76 59 3	2132	78 49 14	2147	80 39 2	2163
	α Aquilæ E.	81 2 38	2858	79 29 25	2882	77 56 43	2907	76 24 33	2935
	Mars E.	97 37 52	2345	95 52 58	2361	94 8 27	2377	92 24 19	2394
	Fomalhaut E.	105 44 30	2437	104 1 48	2447	102 19 20	2458	100 37 7	2470

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV$^{\mathrm{h.}}$	P. L. of Diff.	XVIII$^{\mathrm{h.}}$	P. L. of Diff.	XXI$^{\mathrm{h.}}$	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Sun	W.	108 32 27	2766	110 7 40	2746	111 43 19	2727	113 19 23	2707
	α Arietis	W.	75 51 34	2455	77 33 51	2436	79 16 35	2417	80 59 45	2399
	Aldebaran	W.	44 56 28	2585	46 35 43	2559	48 15 35	2533	49 56 2	2508
	Regulus	E.	36 2 54	2434	34 20 8	2417	32 36 57	2398	30 53 20	2380
	Spica	E.	90 4 53	2437	88 22 11	2419	86 39 4	2401	84 55 30	2383
24	Sun	W.	121 26 11	2612	123 4 49	2593	124 43 53	2575	126 23 22	2557
	α Arietis	W.	89 42 6	2309	91 27 52	2291	93 14 4	2274	95 0 41	2258
	Aldebaran	W.	58 26 41	2394	60 10 25	2373	61 54 39	2352	63 39 23	2332
	Spica	E.	76 11 13	2293	74 25 3	2276	72 38 28	2258	70 51 27	2241
	Saturn	E.	102 2 51	2317	100 17 16	2298	98 31 14	2281	96 44 46	2264
25	α Arietis	W.	103 59 56	2177	105 48 58	2162	107 38 23	2148	109 28 9	2134
	Aldebaran	W.	72 30 6	2239	74 17 35	2223	76 5 28	2207	77 53 45	2191
	Spica	E.	61 50 8	2160	60 0 40	2145	58 10 49	2130	56 20 36	2116
	Saturn	E.	87 46 10	2181	85 57 14	2167	84 7 56	2152	82 18 16	2137
26	Aldebaran	W.	87 0 43	2124	88 51 5	2113	90 41 45	2102	92 32 41	2093
	Pollux	W.	44 0 18	2062	45 52 16	2050	47 44 32	2039	49 37 6	2028
	Jupiter	W.	36 16 4	2059	38 8 6	2047	40 0 27	2036	41 53 5	2026
	Spica	E.	47 4 21	2053	45 12 9	2042	43 19 40	2032	41 26 55	2023
	Saturn	E.	73 4 50	2076	71 13 14	2066	69 21 23	2057	67 29 17	2048
	Antares	E.	92 56 26	2048	91 4 7	2037	89 11 31	2027	87 18 39	2017
27	Aldebaran	W.	101 50 35	2057	103 42 40	2053	105 34 51	2050	107 27 8	2048
	Pollux	W.	59 3 38	1987	60 57 33	1981	62 51 37	1976	64 45 49	1972
	Jupiter	W.	51 19 50	1986	53 13 46	1980	55 7 52	1975	57 2 5	1971
	Saturn	E.	58 5 53	2018	56 12 47	2015	54 19 36	2012	52 26 21	2012
	Antares	E.	77 50 47	1978	75 56 38	1973	74 2 21	1968	72 7 56	1964
28	Pollux	W.	74 18 4	1963	76 12 37	1964	78 7 8	1965	80 1 37	1968
	Jupiter	W.	66 34 23	1963	68 28 56	1964	70 23 27	1965	72 17 56	1968
	Regulus	W.	37 21 17	1956	39 16 1	1956	41 10 44	1958	43 5 24	1961
	Saturn	E.	43 0 25	2026	41 7 32	2034	39 14 51	2044	37 22 25	2055
	Antares	E.	62 34 42	1956	60 39 58	1957	58 45 16	1959	56 50 36	1962
29	Pollux	W.	89 32 38	1992	91 26 25	2000	93 20 0	2007	95 13 23	2016
	Jupiter	W.	81 48 51	1993	83 42 36	2000	85 36 10	2009	87 29 31	2017
	Regulus	W.	52 37 20	1985	54 31 18	1993	56 25 4	2000	58 18 38	2009
	Antares	E.	47 18 44	1986	45 24 47	1993	43 31 1	2001	41 37 28	2010
	α Aquilæ	E.	100 6 8	2725	98 30 1	2725	96 53 54	2727	95 17 50	2732
30	Pollux	W.	104 36 31	2070	106 28 16	2083	108 19 42	2096	110 10 47	2111
	Jupiter	W.	96 52 30	2072	98 44 13	2084	100 35 37	2098	102 26 40	2112
	Regulus	W.	67 42 43	2062	69 34 40	2075	71 26 17	2088	73 17 34	2103
	α Aquilæ	E.	87 19 47	2782	85 44 56	2798	84 10 26	2816	82 36 19	2836
	Mars	E.	104 40 58	2288	102 54 41	2302	101 8 44	2315	99 23 7	2331
31	Regulus	W.	82 28 26	2178	84 17 26	2195	86 6 1	2212	87 54 11	2229
	α Aquilæ	E.	74 52 59	2965	73 22 2	2996	71 51 44	3030	70 22 8	3065
	Mars	E.	90 40 35	2410	88 57 15	2428	87 14 20	2446	85 31 51	2464
	Fomalhaut	E.	98 55 11	2483	97 13 34	2497	95 32 16	2512	93 51 19	2528

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to / Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	0 45 6.44	9.100	N. 4 50 58.1	+57.65	16 1.97	64.54	3 43.84	0.754
Thur.	2	0 48 44.92	9.106	5 13 59.5	57.43	16 1.69	64.56	3 25.81	0.748
Frid.	3	0 52 23.55	9.113	5 36 55.5	57.21	16 1.41	64.58	3 7.94	0.741
Sat.	4	0 56 2.36	9.121	5 59 45.8	+56.97	16 1.13	64.60	2 50.24	0.733
SUN.	5	0 59 41.37	9.130	6 22 30.0	56.71	16 0.84	64.63	2 32.74	0.725
Mon.	6	1 3 20.59	9.139	6 45 7.8	56.43	16 0.56	64.66	2 15.46	0.715
Tues.	7	1 7 0.04	9.149	7 7 38.7	+56.14	16 0.28	64.69	1 58.40	0.705
Wed.	8	1 10 39.75	9.160	7 30 2.6	55.84	16 0.00	64.73	1 41.60	0.694
Thur.	9	1 14 19.72	9.171	7 52 19.0	55.52	15 59.72	64.77	1 25.06	0.683
Frid.	10	1 17 59.97	9.183	8 14 27.5	+55.18	15 59.45	64.81	1 8.80	0.671
Sat.	11	1 21 40.51	9.196	8 36 27.8	54.83	15 59.17	64.85	0 52.84	0.659
SUN.	12	1 25 21.37	9.209	8 58 19.5	54.47	15 58.90	64.90	0 37.18	0.646
Mon.	13	1 29 2.54	9.223	9 20 2.2	+54.09	15 58.63	64.94	0 21.84	0.632
Tues.	14	1 32 44.05	9.237	9 41 35.7	53.69	15 58.37	64.99	0 6.84	0.618
Wed.	15	1 36 25.90	9.251	10 2 59.4	53.28	15 58.10	65.05	0 7.82	0.603
Thur.	16	1 40 8.11	9.266	10 24 13.2	+52.86	15 57.84	65.10	0 22.13	0.588
Frid.	17	1 43 50.69	9.282	10 45 16.6	52.42	15 57.58	65.16	0 36.07	0.573
Sat.	18	1 47 33.65	9.298	11 6 9.2	51.96	15 57.33	65.22	0 49.63	0.557
SUN.	19	1 51 17.00	9.315	11 26 50.8	+51.49	15 57.07	65.28	1 2.80	0.540
Mon.	20	1 55 0.76	9.332	11 47 20.9	51.01	15 56.82	65.34	1 15.56	0.523
Tues.	21	1 58 44.93	9.350	12 7 39.4	50.52	15 56.57	65.41	1 27.91	0.506
Wed.	22	2 2 29.53	9.368	12 27 45.8	+50.01	15 56.32	65.47	1 39.83	0.488
Thur.	23	2 6 14.58	9.386	12 47 39.9	49.49	15 56.07	65.54	1 51.30	0.469
Frid.	24	2 10 0.08	9.406	13 7 21.4	48.96	15 55.82	65.61	2 2.32	0.450
Sat.	25	2 13 46.06	9.426	13 26 49.9	+48.41	15 55.57	65.68	2 12.88	0.430
SUN.	26	2 17 32.52	9.446	13 46 5.2	47.85	15 55.33	65.75	2 22.94	0.409
Mon.	27	2 21 19.48	9.467	14 5 6.9	47.28	15 55.08	65.82	2 32.51	0.388
Tues.	28	2 25 6.95	9.489	14 23 54.8	+46.70	15 54.84	65.90	2 41.57	0.367
Wed.	29	2 28 54.94	9.511	14 42 28.5	46.11	15 54.60	65.98	2 50.12	0.345
Thur.	30	2 32 43.47	9.533	15 0 47.8	45.50	15 54.36	66.05	2 58.12	0.322
Frid.	31	2 36 32.54	9.556	N. 15 18 52.4	+44.88	15 54.12	66.13	3 5.58	0.299

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^s.18$ from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from / Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	0 45 5.88	9.102	N. 4 50 54.5	+57.68	3 43.89	0.754	0 41 21.99
Thur.	2	0 48 44.40	9.108	5 13 56.2	57.46	3 25.85	0.748	0 45 18.55
Frid.	3	0 52 23.08	9.115	5 36 52.5	57.23	3 7.98	0.741	0 49 15.10
Sat.	4	0 56 1.93	9.123	5 59 43.1	+56.98	2 50.28	0.733	0 53 11.65
SUN.	5	0 59 40.98	9.132	6 22 27.6	56.72	2 32.77	0.725	0 57 8.21
Mon.	6	1 3 20.25	9.141	6 45 5.6	56.44	2 15.48	0.716	1 1 4.76
Tues.	7	1 6 59.74	9.151	7 7 36.9	+56.15	1 58.43	0.706	1 5 1.32
Wed.	8	1 10 39.49	9.162	7 30 1.0	55.85	1 41.62	0.695	1 8 57.87
Thur.	9	1 14 19.50	9.173	7 52 17.6	55.53	1 25.08	0.683	1 12 54.42
Frid.	10	1 17 59.79	9.185	8 14 26.4	+55.19	1 8.82	0.671	1 16 50.98
Sat.	11	1 21 40.38	9.197	8 36 27.0	54.84	0 52.85	0.659	1 20 47.53
SUN.	12	1 25 21.27	9.210	8 58 18.9	54.48	0 37.19	0.646	1 24 44.09
Mon.	13	1 29 2.49	9.224	9 20 1.9	+54.10	0 21.85	0.632	1 28 40.64
Tues.	14	1 32 44.03	9.238	9 41 35.6	53.70	0 6.84	0.618	1 32 37.20
Wed.	15	1 36 25.92	9.253	10 2 59.6	53.29	0 7.83	0.604	1 36 33.75
Thur.	16	1 40 8.17	9.268	10 24 13.5	+52.86	0 22.13	0.589	1 40 30.30
Frid.	17	1 43 50.78	9.284	10 45 17.1	52.42	0 36.07	0.573	1 44 26.86
Sat.	18	1 47 33.78	9.300	11 6 9.9	51.97	0 49.64	0.557	1 48 23.41
SUN.	19	1 51 17.16	9.316	11 26 51.7	+51.50	1 2.81	0.540	1 52 19.97
Mon.	20	1 55 0.95	9.333	11 47 22.0	51.02	1 15.57	0.523	1 56 16.52
Tues.	21	1 58 45.16	9.351	12 7 40.6	50.53	1 27.92	0.506	2 0 13.08
Wed.	22	2 2 29.79	9.369	12 27 47.3	+50.02	1 39.84	0.488	2 4 9.63
Thur.	23	2 6 14.87	9.388	12 47 41.5	49.50	1 51.32	0.469	2 8 6.19
Frid.	24	2 10 0.40	9.407	13 7 23.1	48.97	2 2.34	0.450	2 12 2.74
Sat.	25	2 13 46.41	9.427	13 26 51.7	+48.42	2 12.89	0.430	2 15 59.30
SUN.	26	2 17 32.90	9.447	13 46 7.1	47.86	2 22.96	0.409	2 19 55.85
Mon.	27	2 21 19.88	9.468	14 5 8.9	47.29	2 32.53	0.388	2 23 52.41
Tues.	28	2 25 7.38	9.490	14 23 56.9	+46.70	2 41.59	0.367	2 27 48.96
Wed.	29	2 28 55.39	9.512	14 42 30.7	46.11	2 50.13	0.345	2 31 45.52
Thur.	30	2 32 43.94	9.534	15 0 50.1	45.50	2 58.14	0.322	2 35 42.08
Frid.	31	2 36 33.04	9.557	N. 15 18 54.7	+44.88	3 5.59	0.299	2 39 38.63

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour, $+9^{s}.8565$. (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	92	12 15 57.9	15 37.9	147.77	− 0.68	0.0000126	+52.9	23 14 48.87
2	93	13 15 3.3	14 43.2	147.69	0.69	0.0001399	53.1	23 10 52.97
3	94	14 14 6.9	13 46.6	147.61	0.66	0.0002674	53.2	23 6 57.06
4	95	15 13 8.8	12 48.4	147.54	− 0.61	0.0003951	+53.1	23 3 1.15
5	96	16 12 9.0	11 48.5	147.47	0.54	0.0005227	53.1	22 59 5.24
6	97	17 11 7.4	10 46.8	147.40	0.44	0.0006500	53.0	22 55 9.34
7	98	18 10 4.0	9 43.3	147.32	− 0.32	0.0007768	+52.8	22 51 13.43
8	99	19 8 58.9	8 38.0	147.25	0.19	0.0009032	52.5	22 47 17.52
9	100	20 7 52.1	7 31.1	147.18	− 0.06	0.0010290	52.2	22 43 21.61
10	101	21 6 43.4	6 22.3	147.10	+ 0.07	0.0011539	+51.9	22 39 25.70
11	102	22 5 32.8	5 11.6	147.02	0.19	0.0012779	51.5	22 35 29.80
12	103	23 4 20.4	3 59.1	146.94	0.29	0.0014009	51.0	22 31 33.89
13	104	24 3 6.0	2 44.5	146.86	+ 0.37	0.0015228	+50.5	22 27 37.98
14	105	25 1 49.5	1 27.9	146.77	0.43	0.0016435	50.0	22 23 42.07
15	106	26 0 30.9	0 9.2	146.68	0.45	0.0017631	49.6	22 19 46.16
16	107	26 59 10.3	58 48.5	146.60	+ 0.45	0.0018817	+49.1	22 15 50.25
17	108	27 57 47.5	57 25.6	146.51	0.42	0.0019991	48.7	22 11 54.34
18	109	28 56 22.6	56 0.5	146.42	0.36	0.0021155	48.3	22 7 58.43
19	110	29 54 55.5	54 33.2	146.32	+ 0.27	0.0022310	+48.0	22 4 2.52
20	111	30 53 26.2	53 3.8	146.23	0.15	0.0023458	47.7	22 0 6.62
21	112	31 51 54.7	51 32.2	146.14	+ 0.03	0.0024598	47.4	21 56 10.71
22	113	32 50 21.0	49 58.4	146.05	− 0.10	0.0025731	+47.1	21 52 14.80
23	114	33 48 45.3	48 22.5	145.97	0.23	0.0026860	46.9	21 48 18.89
24	115	34 47 7.5	46 44.6	145.88	0.36	0.0027984	46.7	21 44 22.98
25	116	35 45 27.7	45 4.7	145.80	− 0.47	0.0029104	+46.6	21 40 27.07
26	117	36 43 45.9	43 22.8	145.72	0.56	0.0030219	46.5	21 36 31.16
27	118	37 42 2.3	41 39.0	145.65	0.64	0.0031331	46.4	21 32 35.25
28	119	38 40 16.9	39 53.4	145.57	− 0.69	0.0032440	+46.3	21 28 39.34
29	120	39 38 29.7	38 6.1	145.50	0.70	0.0033544	46.1	21 24 43.43
30	121	40 36 40.9	36 17.2	145.43	0.68	0.0034644	45.8	21 20 47.52
31	122	41 34 50.5	34 26.6	145.37	− 0.63	0.0035738	+45.5	21 16 51.61

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^d.0$.

Diff. for 1 Hour, $-9^s.8296$. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
16 15.8	16 8.2	59 34.8	−2.26	59 6.9	−2.37	15 34.2	2.52	18.1
16 0.4	15 52.4	58 38.0	2.42	58 8.9	2.41	16 34.4	2.49	19.1
15 44.6	15 37.0	57 40.1	2.37	57 12.1	2.28	17 33.0	2.38	20.1
15 29.7	15 22.8	56 45.3	−2.17	56 20.1	−2.02	18 28.0	2.21	21.1
15 16.5	15 10.6	55 56.8	1.88	55 35.4	1.74	19 18.8	2.02	22.1
15 5.4	15 0.8	55 16.1	1.51	54 59.1	1.33	20 5.3	1.86	23.1
14 56.7	14 53.2	54 44.2	−1.15	54 31.5	−0.97	20 48.4	1.74	24.1
14 50.4	14 48.1	54 21.0	0.79	54 12.5	0.63	21 29.0	1.65	25.1
14 46.3	14 45.0	54 5.9	0.46	54 1.3	0.32	22 8.1	1.62	26.1
14 44.2	14 43.9	53 58.3	−0.18	53 57.0	−0.04	22 46.9	1.62	27.1
14 43.9	14 44.4	53 57.3	+0.08	53 59.0	+0.20	23 26.4	1.67	28.1
14 45.2	14 46.4	54 2.0	0.31	54 6.4	0.42	6		29.1
14 47.9	14 49.8	54 12.0	+0.52	54 18.8	+0.61	0 7.6	1.76	0.3
14 51.9	14 54.4	54 26.7	0.71	54 35.9	0.82	0 51.2	1.88	1.3
14 57.3	15 0.4	54 46.3	0.91	54 57.8	1.01	1 38.1	2.03	2.3
15 3.9	15 7.7	55 10.6	+1.12	55 24.7	+1.23	2 28.4	2.17	3.3
15 11.9	15 16.5	55 40.1	1.34	55 56.8	1.45	3 21.9	2.28	4.3
15 21.4	15 26.6	56 14.8	1.55	56 34.1	1.66	4 17.4	2.34	5.3
15 32.2	15 38.1	56 54.6	+1.75	57 16.2	+1.84	5 13.5	2.32	6.3
15 44.2	15 50.6	57 38.7	1.91	58 2.0	1.96	6 8.6	2.26	7.3
15 57.0	16 3.5	58 25.7	1.98	58 49.4	1.96	7 1.9	2.18	8.3
16 9.8	16 16.0	59 12.8	+1.91	59 35.3	+1.82	7 53.3	2.11	9.3
16 21.7	16 26.9	59 56.4	1.68	60 15.5	1.48	8 43.6	2.08	10.3
16 31.4	16 35.0	60 32.0	1.25	60 45.4	0.96	9 33.7	2.10	11.3
16 37.7	16 39.2	60 55.1	+0.63	61 0.6	+0.28	10 24.9	2.18	12.3
16 39.5	16 38.6	61 1.8	−0.09	60 58.5	−0.47	11 18.5	2.30	13.3
16 36.5	16 33.1	60 50.6	0.84	60 38.3	1.19	12 15.4	2.44	14.3
16 28.7	16 23.3	60 22.0	−1.50	60 2.2	−1.78	13 15.4	2.55	15.3
16 17.1	16 10.2	59 39.4	2.00	59 14.3	2.17	14 17.4	2.59	16.3
16 2.9	15 55.4	58 47.4	2.28	58 19.6	2.34	15 18.8	2.51	17.3
15 47.6	15 40.0	57 51.3	−2.35	57 23.3	−2.30	16 17.3	2.35	18.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 1.					FRIDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 38 4.81	2.5546	S.24 45 43.2	8.583	0	17 41 20.80	2.5310	S.28 9 24.6	+ 0.096
1	15 40 38.16	2.5571	24 54 13.0	8.409	1	17 43 52.55	2.5273	28 9 13.6	0.270
2	15 43 11.66	2.5594	25 2 32.3	8.233	2	17 46 24.08	2.5235	28 8 52.2	0.442
3	15 45 45.29	2.5616	25 10 41.0	8.057	3	17 48 55.37	2.5195	28 8 20.5	0.614
4	15 48 19.05	2.5637	25 18 39.1	7.880	4	17 51 26.42	2.5154	28 7 38.5	0.786
5	15 50 52.94	2.5657	25 26 26.6	7.703	5	17 53 57.22	2.5112	28 6 46.2	0.957
6	15 53 26.94	2.5676	25 34 3.5	7.525	6	17 56 27.77	2.5069	28 5 43.6	1.127
7	15 56 1.05	2.5694	25 41 29.6	7.346	7	17 58 58.05	2.5024	28 4 30.9	1.296
8	15 58 35.27	2.5711	25 48 45.0	7.167	8	18 1 28.06	2.4979	28 3 8.1	1.464
9	16 1 9.58	2.5726	25 55 49.6	6.987	9	18 3 57.80	2.4933	28 1 35.2	1.632
10	16 3 43.98	2.5740	26 2 43.4	6.806	10	18 6 27.26	2.4885	27 59 52.3	1.798
11	16 6 18.46	2.5753	26 9 26.3	6.624	11	18 8 56.42	2.4836	27 57 59.5	1.963
12	16 8 53.02	2.5766	26 15 58.3	6.443	12	18 11 25.29	2.4787	27 55 56.8	2.127
13	16 11 27.65	2.5776	26 22 19.4	6.261	13	18 13 53.86	2.4736	27 53 44.3	2.290
14	16 14 2.33	2.5785	26 28 29.6	6.078	14	18 16 22.12	2.4684	27 51 22.0	2.452
15	16 16 37.07	2.5794	26 34 28.8	5.896	15	18 18 50.07	2.4631	27 48 50.1	2.612
16	16 19 11.86	2.5801	26 40 17.1	5.713	16	18 21 17.70	2.4578	27 46 8.6	2.772
17	16 21 46.68	2.5806	26 45 54.4	5.530	17	18 23 45.01	2.4525	27 43 17.5	2.932
18	16 24 21.53	2.5810	26 51 20.7	5.347	18	18 26 12.00	2.4470	27 40 16.8	3.090
19	16 26 56.40	2.5813	26 56 36.0	5.163	19	18 28 38.65	2.4414	27 37 6.7	3.246
20	16 29 31.29	2.5816	27 1 40.3	4.979	20	18 31 4.96	2.4357	27 33 47.3	3.401
21	16 32 6.19	2.5816	27 6 33.5	4.795	21	18 33 30.93	2.4299	27 30 18.6	3.555
22	16 34 41.08	2.5814	27 11 15.7	4.611	22	18 35 56.55	2.4240	27 26 40.7	3.708
23	16 37 15.96	2.5812	S.27 15 46.8	4.427	23	18 38 21.81	2.4181	S.27 22 53.6	3.860
	THURSDAY 2.					SATURDAY 4.			
0	16 39 50.83	2.5809	S.27 20 6.9	4.242	0	18 40 46.72	2.4122	S.27 18 57.5	4.010
1	16 42 25.67	2.5804	27 24 15 9	4.058	1	18 43 11.27	2.4061	27 14 52.4	4.160
2	16 45 0.48	2.5797	27 28 13.9	3.875	2	18 45 35.45	2.4000	27 10 38.3	4.309
3	16 47 35.24	2.5789	27 32 0.9	3.691	3	18 47 59.27	2.3938	27 6 15.3	4.456
4	16 50 9.95	2.5780	27 35 36.8	3.507	4	18 50 22.71	2.3875	27 1 43.6	4.602
5	16 52 44.60	2.5770	27 39 1.7	3.323	5	18 52 45.77	2.3812	26 57 3.1	4.747
6	16 55 19.19	2.5758	27 42 15.6	3.139	6	18 55 8.45	2.3748	26 52 14.0	4.889
7	16 57 53.70	2.5745	27 45 18.4	2.956	7	18 57 30.75	2.3684	26 47 16.4	5.031
8	17 0 28.13	2.5730	27 48 10.3	2.773	8	18 59 52.66	2.3619	26 42 10.3	5.172
9	17 3 2.46	2.5713	27 50 51.2	2.590	9	19 2 14.18	2.3554	26 36 55.7	5.312
10	17 5 36.69	2.5696	27 53 21.1	2.408	10	19 4 35.31	2.3489	26 31 32.8	5.451
11	17 8 10.81	2.5677	27 55 40.1	2.226	11	19 6 56.05	2.3423	26 26 1.6	5.587
12	17 10 44.82	2.5657	27 57 48.2	2.044	12	19 9 16.39	2.3357	26 20 22.3	5.722
13	17 13 18.70	2.5636	27 59 45.4	1.862	13	19 11 36.33	2.3290	26 14 34.9	5.857
14	17 15 52.45	2.5612	28 1 31.7	1.682	14	19 13 55.87	2.3223	26 8 39.4	5.991
15	17 18 26.05	2.5587	28 3 7.2	1.502	15	19 16 15.01	2.3156	26 2 36.0	6.123
16	17 20 59.50	2.5562	28 4 31.9	1.322	16	19 18 33.74	2.3088	25 56 24.7	6.253
17	17 23 32.80	2.5536	28 5 45.8	1.142	17	19 20 52.06	2.3020	25 50 5.6	6.383
18	17 26 5.93	2.5507	28 6 49.0	0.964	18	19 23 9.98	2.2952	25 43 38.8	6.511
19	17 28 38.88	2.5477	28 7 41.5	0.786	19	19 25 27.49	2.2884	25 37 4.3	6.638
20	17 31 11.66	2.5447	28 8 23.3	0.608	20	19 27 44.59	2.2815	25 30 22.3	6.763
21	17 33 44.25	2.5415	28 8 54.5	0.431	21	19 30 1.27	2.2746	25 23 32.8	6.887
22	17 36 16.64	2.5382	28 9 15.1	0.255	22	19 32 17.54	2.2677	25 16 35.9	7.009
23	17 38 48.83	2.5347	28 9 25.1	− 0.079	23	19 34 33.40	2.2609	25 9 31.7	7.131
24	17 41 20.80	2.5310	S.28 9 24.6	+ 0.096	24	19 36 48.85	2.2540	S.25 2 20.2	7.252

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.			
m s	s	° ′ ″	″		h m s	s	° ′ ″	″
36 48.85	2.2540	S.25 2 20.2	7.252	0	21 17 20.38	1.9480	S.17 19 36.8	11.577
39 3.88	2.2471	24 55 1.5	7.371	1	21 19 17.10	1.9427	17 8 0.3	11.639
41 18.50	2.2402	24 47 35.7	7.487	2	21 21 13.50	1.9374	16 56 20.1	11.701
43 32.70	2.2332	24 40 3.0	7.603	3	21 23 9.59	1.9323	16 44 36.2	11.762
45 46.49	2.2263	24 32 23.3	7.719	4	21 25 5.38	1.9272	16 32 48.7	11.822
47 59.86	2.2193	24 24 36.7	7.832	5	21 27 0.86	1.9222	16 20 57.6	11.880
50 12.81	2.2124	24 16 43.4	7.944	6	21 28 56.04	1.9172	16 9 3.1	11.937
52 25.35	2.2055	24 8 43.4	8.056	7	21 30 50.93	1.9123	15 57 5.2	11.994
54 37.47	2.1986	24 0 36.7	8.166	8	21 32 45.52	1.9074	15 45 3.8	12.051
56 49.18	2.1918	23 52 23.5	8.274	9	21 34 39.82	1.9027	15 32 59.1	12.106
59 0.48	2.1849	23 44 3.8	8.382	10	21 36 33.84	1.8980	15 20 51.1	12.160
1 11.37	2.1780	23 35 37.7	8.488	11	21 38 27.58	1.8933	15 8 39.9	12.212
3 21.84	2.1711	23 27 5.2	8.593	12	21 40 21.04	1.8887	14 56 25.6	12.264
5 31.90	2.1643	23 18 26.5	8.696	13	21 42 14.23	1.8842	14 44 8.2	12.316
7 41.55	2.1575	23 9 41.7	8.798	14	21 44 7.15	1.8797	14 31 47.7	12.367
9 50.80	2.1507	23 0 50.7	8.900	15	21 45 59.80	1.8753	14 19 24.2	12.416
11 59.64	2.1440	22 51 53.7	8.999	16	21 47 52.19	1.8710	14 6 57.8	12.464
14 8.08	2.1372	22 42 50.8	9.097	17	21 49 44.32	1.8667	13 54 28.5	12.512
16 16.11	2.1305	22 33 42.0	9.195	18	21 51 36.20	1.8626	13 41 56.3	12.560
18 23.74	2.1238	22 24 27.4	9.291	19	21 53 27.83	1.8585	13 29 21.3	12.606
20 30.97	2.1172	22 15 7.1	9.386	20	21 55 19.22	1.8544	13 16 43.6	12.650
22 37.80	2.1105	22 5 41.1	9.480	21	21 57 10.36	1.8504	13 4 3.3	12.693
24 44.23	2.1039	21 56 9.5	9.572	22	21 59 1.27	1.8465	12 51 20.4	12.737
26 50.27	2.0974	S.21 46 32.4	9.663	23	22 0 51.94	1.8426	S.12 38 34.9	12.780
MONDAY 6.					WEDNESDAY 8.			
28 55.92	2.0909	S.21 36 49.9	9.753	0	22 2 42.38	1.8388	S.12 25 46.8	12.822
31 1.18	2.0844	21 27 2.1	9.842	1	22 4 32.59	1.8351	12 12 56.3	12.862
33 6.05	2.0779	21 17 8.9	9.930	2	22 6 22.59	1.8315	12 0 3.4	12.902
35 10.53	2.0714	21 7 10.5	10.016	3	22 8 12.37	1.8279	11 47 8.0	12.942
37 14.62	2.0651	20 57 7.0	10.101	4	22 10 1.94	1.8244	11 34 10.3	12.980
39 18.34	2.0588	20 46 58.4	10.186	5	22 11 51.30	1.8209	11 21 10.4	13.018
41 21.68	2.0525	20 36 44.7	10.269	6	22 13 40.45	1.8175	11 8 8.2	13.054
43 24.64	2.0463	20 26 26.1	10.351	7	22 15 29.40	1.8143	10 55 3.9	13.089
45 27.23	2.0401	20 16 2.6	10.432	8	22 17 18.16	1.8111	10 41 57.5	13.125
47 29.45	2.0339	20 5 34.3	10.511	9	22 19 6.73	1.8079	10 28 48.9	13.160
49 31.30	2.0278	19 55 1.3	10.589	10	22 20 55.11	1.8047	10 15 38.3	13.193
51 32.79	2.0218	19 44 23.6	10.667	11	22 22 43.30	1.8017	10 2 25.8	13.225
53 33.92	2.0158	19 33 41.2	10.744	12	22 24 31.31	1.7987	9 49 11.3	13.257
55 34.69	2.0098	19 22 54.3	10.819	13	22 26 19.14	1.7958	9 35 55.0	13.288
57 35.10	2.0039	19 12 2.9	10.893	14	22 28 6.81	1.7931	9 22 36.8	13.318
59 35.16	1.9981	19 1 7.1	10.966	15	22 29 54.31	1.7904	9 9 16.8	13.348
1 34.87	1.9923	18 50 7.0	11.038	16	22 31 41.65	1.7877	8 55 55.0	13.377
3 34.24	1.9866	18 39 2.6	11.109	17	22 33 28.83	1.7850	8 42 31.6	13.404
5 33.26	1.9808	18 27 53.9	11.179	18	22 35 15.85	1.7824	8 29 6.5	13.431
7 31.94	1.9752	18 16 41.1	11.247	19	22 37 2.72	1.7800	8 15 39.8	13.457
9 30.29	1.9697	18 5 24.2	11.315	20	22 38 49.45	1.7776	8 2 11.6	13.483
11 28.30	1.9641	17 54 3.3	11.382	21	22 40 36.03	1.7752	7 48 41.8	13.508
13 25.98	1.9587	17 42 38.4	11.448	22	22 42 22.47	1.7729	7 35 10.6	13.533
15 23.34	1.9533	17 31 9.5	11.513	23	22 44 8.78	1.7708	7 21 37.9	13.557
17 20.38	1.9480	S.17 19 36.8	11.577	24	22 45 54.96	1.7687	S. 7 8 3.8	13.579

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 45 54.96	1.7687	S. 7 8 3.8	13.579	0	0 9 39.79	1.7469	N. 3 55 58.1	13.812
1	22 47 41.02	1.7666	6 54 28.4	13.601	1	0 11 24.64	1.7481	4 9 46.4	13.799
2	22 49 26.95	1.7645	6 40 51.7	13.622	2	0 13 9.56	1.7493	4 23 34.0	13.786
3	22 51 12.76	1.7626	6 27 13.8	13.642	3	0 14 54.56	1.7507	4 37 20.8	13.772
4	22 52 58.46	1.7608	6 13 34.7	13.662	4	0 16 39.64	1.7520	4 51 6.7	13.757
5	22 54 44.06	1.7591	5 59 54.4	13.681	5	0 18 24.80	1.7534	5 4 51.6	13.740
6	22 56 29.55	1.7574	5 46 13.0	13.699	6	0 20 10.05	1.7550	5 18 35.5	13.723
7	22 58 14.94	1.7557	5 32 30.6	13.716	7	0 21 55.40	1.7566	5 32 18.4	13.706
8	23 0 0.23	1.7541	5 18 47.1	13.733	8	0 23 40.84	1.7582	5 46 0.2	13.688
9	23 1 45.43	1.7526	5 5 2.6	13.749	9	0 25 26.38	1.7598	5 59 41.0	13.670
10	23 3 30.54	1.7512	4 51 17.2	13.764	10	0 27 12.02	1.7616	6 13 20.6	13.649
11	23 5 15.57	1.7498	4 37 30.9	13.779	11	0 28 57.77	1.7635	6 26 58.9	13.628
12	23 7 0.52	1.7485	4 23 43.7	13.793	12	0 30 43.64	1.7654	6 40 36.0	13.607
13	23 8 45.39	1.7472	4 9 55.7	13.806	13	0 32 29.62	1.7673	6 54 11.8	13.585
14	23 10 30.19	1.7461	3 56 7.0	13.818	14	0 34 15.72	1.7694	7 7 46.2	13.562
15	23 12 14.92	1.7450	3 42 17.6	13.829	15	0 36 1.95	1.7715	7 21 19.3	13.539
16	23 13 59.59	1.7440	3 28 27.5	13.841	16	0 37 48.30	1.7736	7 34 50.9	13.514
17	23 15 44.20	1.7430	3 14 36.7	13.852	17	0 39 34.78	1.7759	7 48 21.0	13.489
18	23 17 28.75	1.7421	3 0 45.3	13.861	18	0 41 21.40	1.7782	8 1 49.6	13.463
19	23 19 13.25	1.7413	2 46 53.4	13.869	19	0 43 8.16	1.7805	8 15 16.6	13.436
20	23 20 57.71	1.7406	2 33 1.0	13.877	20	0 44 55.06	1.7828	8 28 41.9	13.408
21	23 22 42.12	1.7398	2 19 8.1	13.885	21	0 46 42.10	1.7852	8 42 5.6	13.381
22	23 24 26.49	1.7393	2 5 14.8	13.892	22	0 48 29.29	1.7878	8 55 27.6	13.352
23	23 26 10.83	1.7388	S. 1 51 21.1	13.898	23	0 50 16.64	1.7905	N. 9 8 47.8	13.321
FRIDAY 10.					SUNDAY 12.				
0	23 27 55.14	1.7383	S. 1 37 27.1	13.903	0	0 52 4.15	1.7932	N. 9 22 6.1	13.290
1	23 29 39.42	1.7378	1 23 32.8	13.908	1	0 53 51.82	1.7959	9 35 22.6	13.259
2	23 31 23.68	1.7375	1 9 38.2	13.912	2	0 55 39.65	1.7986	9 48 37.2	13.226
3	23 33 7.92	1.7372	0 55 43.4	13.914	3	0 57 27.65	1.8014	10 1 49.7	13.192
4	23 34 52.14	1.7369	0 41 48.5	13.916	4	0 59 15.82	1.8043	10 15 0.2	13.158
5	23 36 36.35	1.7368	0 27 53.5	13.918	5	1 1 4.17	1.8072	10 28 8.7	13.123
6	23 38 20.56	1.7367	0 13 58.3	13.920	6	1 2 52.69	1.8103	10 41 15.0	13.087
7	23 40 4.76	1.7367	S. 0 0 3.1	13.920	7	1 4 41.40	1.8134	10 54 19.1	13.050
8	23 41 48.97	1.7368	N. 0 13 52.1	13.919	8	1 6 30.30	1.8165	11 7 21.0	13.013
9	23 43 33.18	1.7369	0 27 47.2	13.918	9	1 8 19.38	1.8196	11 20 20.7	12.975
10	23 45 17.40	1.7372	0 41 42.2	13.916	10	1 10 8.65	1.8228	11 33 18.0	12.935
11	23 47 1.64	1.7375	0 55 37.1	13.913	11	1 11 58.12	1.8262	11 46 12.9	12.895
12	23 48 45.90	1.7378	1 9 31.8	13.910	12	1 13 47.80	1.8296	11 59 5.4	12.854
13	23 50 30.18	1.7382	1 23 26.3	13.906	13	1 15 37.68	1.8330	12 11 55.4	12.812
14	23 52 14.48	1.7386	1 37 20.5	13.901	14	1 17 27.76	1.8364	12 24 42.9	12.769
15	23 53 58.81	1.7391	1 51 14.4	13.895	15	1 19 18.05	1.8400	12 37 27.7	12.725
16	23 55 43.18	1.7397	2 5 7.9	13.888	16	1 21 8.56	1.8437	12 50 9.9	12.681
17	23 57 27.58	1.7403	2 19 1.0	13.882	17	1 22 59.29	1.8473	13 2 49.4	12.636
18	23 59 12.02	1.7411	2 32 53.7	13.874	18	1 24 50.23	1.8509	13 15 26.2	12.590
19	0 0 56.51	1.7419	2 46 45.9	13.866	19	1 26 41.40	1.8547	13 28 0.2	12.542
20	0 2 41.05	1.7428	3 0 37.6	13.857	20	1 28 32.80	1.8585	13 40 31.3	12.493
21	0 4 25.65	1.7437	3 14 28.7	13.847	21	1 30 24.42	1.8623	13 52 59.4	12.444
22	0 6 10.30	1.7447	3 28 19.2	13.836	22	1 32 16.28	1.8663	14 5 24.6	12.395
23	0 7 55.01	1.7457	3 42 9.0	13.824	23	1 34 8.38	1.8703	14 17 46.8	12.344
24	0 9 39.79	1.7469	N. 3 55 58.1	13.812	24	1 36 0.72	1.8743	N. 14 30 5.9	12.292

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.			
h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
1 36 0.72	1.8743	N.14 30 5.9	12.292	0	3 11 26.67	2.1144	N.23 1 44.6	8.631
1 37 53.30	1.8784	14 42 21.8	12.239	1	3 13 33.70	2.1199	23 10 19.4	8.529
1 39 46.13	1.8826	14 54 34.6	12.186	2	3 15 41.06	2.1255	23 18 48.1	8.427
1 41 39.21	1.8867	15 6 44.1	12.131	3	3 17 48.76	2.1311	23 27 10.6	8.323
1 43 32.54	1.8909	15 18 50.3	12.076	4	3 19 56.79	2.1366	23 35 26.8	8.217
1 45 26.12	1.8952	15 30 53.2	12.019	5	3 22 5.15	2.1422	23 43 36.6	8.110
1 47 19.96	1.8995	15 42 52.6	11.961	6	3 24 13.85	2.1477	23 51 40.0	8.003
1 49 14.06	1.9039	15 54 48.5	11.902	7	3 26 22.88	2.1532	23 59 37.0	7.895
1 51 8.43	1.9083	16 6 40.9	11.843	8	3 28 32.23	2.1587	24 7 27.4	7.785
1 53 3.06	1.9127	16 18 29.7	11.783	9	3 30 41.92	2.1642	24 15 11.2	7.675
1 54 57.96	1.9173	16 30 14.8	11.722	10	3 32 51.94	2.1697	24 22 48.4	7.563
1 56 53.14	1.9219	16 41 56.3	11.660	11	3 35 2.29	2.1752	24 30 18.8	7.450
1 58 48.59	1.9265	16 53 34.0	11.596	12	3 37 12.96	2.1806	24 37 42.4	7.336
2 0 44.32	1.9312	17 5 7.8	11.532	13	3 39 23.96	2.1861	24 44 59.1	7.222
2 2 40.33	1.9358	17 16 37.8	11.467	14	3 41 35.29	2.1915	24 52 9.0	7.107
2 4 36.62	1.9406	17 28 3.8	11.400	15	3 43 46.94	2.1968	24 59 11.9	6.989
2 6 33.20	1.9454	17 39 25.8	11.332	16	3 45 58.91	2.2022	25 6 7.7	6.871
2 8 30.07	1.9502	17 50 43.7	11.264	17	3 48 11.21	2.2077	25 12 56.4	6.752
2 10 27.22	1.9550	18 1 57.5	11.195	18	3 50 23.83	2.2129	25 19 38.0	6.632
2 12 24.67	1.9600	18 13 7.1	11.125	19	3 52 36.76	2.2182	25 26 12.3	6.511
2 14 22.42	1.9649	18 24 12.5	11.054	20	3 54 50.01	2.2235	25 32 39.3	6.389
2 16 20.46	1.9698	18 35 13.6	10.982	21	3 57 3.58	2.2287	25 38 59.0	6.267
2 18 18.80	1.9748	18 46 10.3	10.908	22	3 59 17.46	2.2339	25 45 11.3	6.143
2 20 17.44	1.9799	N.18 57 2.6	10.833	23	4 1 31.65	2.2390	N.25 51 16.1	6.017
TUESDAY 14.					THURSDAY 16.			
2 22 16.39	1.9851	N.19 7 50.3	10.758	0	4 3 46.14	2.2441	N.25 57 13.3	5.891
2 24 15.65	1.9902	19 18 33.5	10.682	1	4 6 0.94	2.2492	26 3 3.0	5.764
2 26 15.21	1.9953	19 29 12.1	10.604	2	4 8 16.04	2.2542	26 8 45.0	5.636
2 28 15.08	2.0005	19 39 46.0	10.525	3	4 10 31.44	2.2592	26 14 19.3	5.507
2 30 15.27	2.0057	19 50 15.1	10.446	4	4 12 47.14	2.2641	26 19 45.9	5.378
2 32 15.77	2.0109	20 0 39.5	10.366	5	4 15 3.13	2.2689	26 25 4.7	5.247
2 34 16.58	2.0162	20 10 59.0	10.284	6	4 17 19.41	2.2737	26 30 15.5	5.114
2 36 17.71	2.0215	20 21 13.6	10.202	7	4 19 35.98	2.2785	26 35 18.4	4.982
2 38 19.16	2.0268	20 31 23.2	10.118	8	4 21 52.83	2.2833	26 40 13.4	4.849
2 40 20.93	2.0322	20 41 27.7	10.033	9	4 24 9.97	2.2880	26 45 0.3	4.714
2 42 23.02	2.0375	20 51 27.1	9.947	10	4 26 27.39	2.2926	26 49 39.1	4.579
2 44 25.43	2.0429	21 1 21.3	9.859	11	4 28 45.08	2.2970	26 54 9.8	4.442
2 46 28.17	2.0483	21 11 10.2	9.771	12	4 31 3.03	2.3014	26 58 32.2	4.305
2 48 31.23	2.0537	21 20 53.8	9.682	13	4 33 21.25	2.3059	27 2 46.4	4.167
2 50 34.62	2.0592	21 30 32.1	9.592	14	4 35 39.74	2.3103	27 6 52.3	4.028
2 52 38.34	2.0647	21 40 4.9	9.501	15	4 37 58.49	2.3146	27 10 49.8	3.888
2 54 42.39	2.0702	21 49 32.2	9.408	16	4 40 17.49	2.3188	27 14 38.9	3.748
2 56 46.77	2.0757	21 58 53.9	9.315	17	4 42 36.74	2.3229	27 18 19.5	3.607
2 58 51.47	2.0812	22 8 10.0	9.221	18	4 44 56.24	2.3270	27 21 51.7	3.465
3 0 56.51	2.0867	22 17 20.4	9.125	19	4 47 15.98	2.3309	27 25 15.3	3.322
3 3 1.88	2.0922	22 26 25.0	9.028	20	4 49 35.95	2.3348	27 28 30.3	3.178
3 5 7.58	2.0977	22 35 23.8	8.931	21	4 51 56.16	2.3387	27 31 36.6	3.033
3 7 13.61	2.1032	22 44 16.7	8.832	22	4 54 16.60	2.3425	27 34 34.3	2.888
3 9 19.97	2.1088	22 53 3.7	8.732	23	4 56 37.26	2.3461	27 37 23.2	2.742
3 11 26.67	2.1144	N.23 1 44.6	8.631	24	4 58 58.13	2.3497	N.27 40 3.3	2.595

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 17.					SUNDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 58 58.13	2.3497	N.27 40 3.3	2.595	0	6 54 5.35	2.4088	N.26 46 37.7	4.908
1	5 1 19.22	2.3533	27 42 34.6	2.447	1	6 56 29.85	2.4077	26 41 38.5	5.066
2	5 3 40.52	2.3566	27 44 57.0	2.300	2	6 58 54.28	2.4064	26 36 29.8	5.223
3	5 6 2.02	2.3599	27 47 10.6	2.152	3	7 1 18.62	2.4050	26 31 11.7	5.380
4	5 8 23.71	2.3632	27 49 15.2	2.002	4	7 3 42.88	2.4036	26 25 44.2	5.537
5	5 10 45.60	2.3664	27 51 10.8	1.853	5	7 6 7.06	2.4022	26 20 7.3	5.693
6	5 13 7.68	2.3695	27 52 57.5	1.703	6	7 8 31.15	2.4007	26 14 21.0	5.849
7	5 15 29.94	2.3724	27 54 35.1	1.551	7	7 10 55.14	2.3990	26 8 25.4	6.004
8	5 17 52.37	2.3752	27 56 3.6	1.398	8	7 13 19.03	2.3973	26 2 20.5	6.159
9	5 20 14.97	2.3780	27 57 22.9	1.246	9	7 15 42.82	2.3956	25 56 6.3	6.313
10	5 22 37.74	2.3807	27 58 33.1	1.093	10	7 18 6.50	2.3937	25 49 42.9	6.467
11	5 25 0.66	2.3833	27 59 34.1	0.940	11	7 20 30.06	2.3917	25 43 10.2	6.621
12	5 27 23.73	2.3858	28 0 25.9	0.786	12	7 22 53.51	2.3897	25 36 28.3	6.774
13	5 29 46.96	2.3883	28 1 8.4	0.632	13	7 25 16.83	2.3877	25 29 37.3	6.927
14	5 32 10.32	2.3905	28 1 41.7	0.477	14	7 27 40.03	2.3856	25 22 37.1	7.079
15	5 34 33.82	2.3927	28 2 5.7	0.322	15	7 30 3.10	2.3834	25 15 27.8	7.231
16	5 36 57.45	2.3948	28 2 20.3	0.166	16	7 32 26.04	2.3812	25 8 9.4	7.382
17	5 39 21.20	2.3968	28 2 25.6	+ 0.011	17	7 34 48.84	2.3788	25 0 42.0	7.532
18	5 41 45.07	2.3988	28 2 21.6	− 0.145	18	7 37 11.50	2.3765	24 53 5.6	7.682
19	5 44 9.05	2.4006	28 2 8.2	0.302	19	7 39 34.02	2.3741	24 45 20.2	7.831
20	5 46 33.14	2.4022	28 1 45.3	0.460	20	7 41 56.39	2.3716	24 37 25.9	7.978
21	5 48 57.32	2.4038	28 1 13.0	0.617	21	7 44 18.61	2.3691	24 29 22.8	8.126
22	5 51 21.60	2.4054	28 0 31.2	0.775	22	7 46 40.68	2.3665	24 21 10.8	8.273
23	5 53 45.97	2.4068	N.27 59 40.0	0.933	23	7 49 2.59	2.3639	N.24 12 50.0	8.420
	SATURDAY 18.					MONDAY 20.			
0	5 56 10.41	2.4079	N.27 58 39.3	1.091	0	7 51 24.35	2.3613	N.24 4 20.4	8.566
1	5 58 34.92	2.4092	27 57 29.1	1.249	1	7 53 45.95	2.3586	23 55 42.1	8.710
2	6 0 59.51	2.4103	27 56 9.4	1.408	2	7 56 7.38	2.3559	23 46 55.2	8.854
3	6 3 24.16	2.4113	27 54 40.1	1.567	3	7 58 28.65	2.3531	23 37 59.6	8.998
4	6 5 48.86	2 4122	27 53 1.3	1.727	4	8 0 49.75	2.3502	23 28 55.4	9.141
5	6 8 13.62	2.4130	27 51 12.9	1.886	5	8 3 10.68	2.3473	23 19 42.7	9.282
6	6 10 38.42	2.4137	27 49 15.0	2.045	6	8 5 31.43	2.3444	23 10 21.5	9.423
7	6 13 3.26	2.4142	27 47 7.5	2.204	7	8 7 52.01	2.3415	23 0 51.9	9.563
8	6 15 28.13	2.4147	27 44 50.5	2.363	8	8 10 12.41	2.3386	22 51 13.9	9.703
9	6 17 53.02	2.4150	27 42 23.9	2.523	9	8 12 32.64	2.3357	22 41 27.5	9.842
10	6 20 17.93	2.4152	27 39 47.7	2.682	10	8 14 52.69	2.3327	22 31 32.9	9.979
11	6 22 42.85	2.4154	27 37 2.0	2.842	11	8 17 12.56	2.3297	22 21 30.1	10.116
12	6 25 7.78	2.4155	27 34 6.7	3.002	12	8 19 32.25	2.3267	22 11 19.0	10.252
13	6 27 32.7[illegible]	2.4155	27 31 1.8	3.162	13	8 21 51.76	2.3236	22 0 59.8	10.387
14	6 29 57.64	2.4153	27 27 47.3	3.321	14	8 24 11.08	2.3205	21 50 32.5	10.521
15	6 32 22.55	2.4150	27 24 23.3	3.480	15	8 26 30.22	2.3174	21 39 57.3	10.654
16	6 34 47.44	2.4147	27 20 49.7	3.639	16	8 28 49.17	2.3143	21 29 14.1	10.786
17	6 37 12.32	2.4144	27 17 6.6	3.798	17	8 31 7.94	2.3112	21 18 23.0	10.917
18	6 39 37.17	2.4139	27 13 13.9	3.957	18	8 33 26.52	2.3082	21 7 24.0	11.048
19	6 42 1.98	2.4133	27 9 11.7	4.117	19	8 35 44.92	2.3051	20 56 17.2	11.177
20	6 44 26.76	2.4126	27 4 59.9	4.276	20	8 38 3.13	2.3020	20 45 2.7	11.305
21	6 46 51.49	2.4117	27 0 38.6	4.434	21	8 40 21.16	2.2989	20 33 40.6	11.432
22	6 49 16.17	2.4108	26 56 7.8	4.593	22	8 42 39.00	2.2958	20 22 10.9	11.558
23	6 51 40.79	2.4098	26 51 27.5	4.751	23	8 44 56.65	2.2927	20 10 33.6	11.684
24	6 54 5.35	2.4088	N.26 46 37.7	4.908	24	8 47 14.12	2.2896	N.19 58 48.8	11.808

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	8	47	14.12	2.2896	N.19	58	48.8	11.808
1	8	49	31.40	2.2865	19	46	56.6	11.932
2	8	51	48.50	2.2834	19	34	57.0	12.054
3	8	54	5.41	2.2803	19	22	50.1	12.175
4	8	56	22.14	2.2773	19	10	36.0	12.295
5	8	58	38.69	2.2743	18	58	14.7	12.413
6	9	0	55.06	2.2713	18	45	46.4	12.531
7	9	3	11.25	2.2683	18	33	11.0	12.648
8	9	5	27.26	2.2653	18	20	28.6	12.763
9	9	7	43.09	2.2624	18	7	39.4	12.878
10	9	9	58.75	2.2595	17	54	43.3	12.992
11	9	12	14.23	2.2565	17	41	40.4	13.103
12	9	14	29.53	2.2536	17	28	30.9	13.213
13	9	16	44.66	2.2508	17	15	14.8	13.323
14	9	18	59.63	2.2481	17	1	52.1	13.433
15	9	21	14.43	2.2453	16	48	22.8	13.541
16	9	23	29.06	2.2425	16	34	47.2	13.646
17	9	25	43.53	2.2397	16	21	5.3	13.751
18	9	27	57.83	2.2370	16	7	17.1	13.855
19	9	30	11.97	2.2344	15	53	22.7	13.957
20	9	32	25.96	2.2319	15	39	22.2	14.058
21	9	34	39.80	2.2293	15	25	15.7	14.158
22	9	36	53.48	2.2268	15	11	3.2	14.257
23	9	39	7.02	2.2244	N.14	56	44.8	14.354

WEDNESDAY 22.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	9	41	20.41	2.2219	N.14	42	20.7	14.450
1	9	43	33.65	2.2196	14	27	50.8	14.546
2	9	45	46.76	2.2173	14	13	15.2	14.639
3	9	47	59.73	2.2150	13	58	34.1	14.731
4	9	50	12.56	2.2128	13	43	47.5	14.822
5	9	52	25.26	2.2106	13	28	55.5	14.912
6	9	54	37.83	2.2084	13	13	58.1	15.001
7	9	56	50.27	2.2064	12	58	55.4	15.088
8	9	59	2.60	2.2045	12	43	47.6	15.173
9	10	1	14.81	2.2025	12	28	34.7	15.257
10	10	3	26.90	2.2006	12	13	16.8	15.339
11	10	5	38.88	2.1987	11	57	54.0	15.420
12	10	7	50.75	2.1970	11	42	26.3	15.501
13	10	10	2.52	2.1953	11	26	53.9	15.579
14	10	12	14.19	2.1937	11	11	16.8	15.657
15	10	14	25.76	2.1921	10	55	35.1	15.733
16	10	16	37.24	2.1906	10	39	48.9	15.807
17	10	18	48.63	2.1892	10	23	58.3	15.880
18	10	20	59.94	2.1878	10	8	3.3	15.952
19	10	23	11.17	2.1865	9	52	4.1	16.021
20	10	25	22.32	2.1852	9	36	0.8	16.089
21	10	27	33.40	2.1841	9	19	53.4	16.157
22	10	29	44.41	2 1830	9	3	42.0	16.223
23	10	31	55.36	2.1820	8	47	26.7	16.287
24	10	34	6.25	2.1810	N. 8	31	7.6	16.349

THURSDAY 23.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	10	34	6.25	2.1810	N. 8	31	7.6	16.349
1	10	36	17.08	2.1801	8	14	44.8	16.410
2	10	38	27.86	2.1793	7	58	18.4	16.469
3	10	40	38.60	2.1786	7	41	48.5	16.527
4	10	42	49.30	2.1780	7	25	15.1	16.584
5	10	44	59.96	2.1774	7	8	38.4	16.638
6	10	47	10.58	2.1769	6	51	58.5	16.692
7	10	49	21.18	2.1765	6	35	15.4	16.744
8	10	51	31.76	2.1761	6	18	29.2	16.794
9	10	53	42.31	2.1758	6	1	40.1	16.842
10	10	55	52.85	2.1756	5	44	48.1	16.889
11	10	58	3.38	2.1755	5	27	53.4	16.934
12	11	0	13.91	2.1755	5	10	56.0	16.978
13	11	2	24.44	2.1756	4	53	56.0	17.020
14	11	4	34.98	2.1757	4	36	53.6	17.060
15	11	6	45.52	2.1758	4	19	48.8	17.099
16	11	8	56.08	2.1761	4	2	41.7	17.137
17	11	11	6.66	2.1765	3	45	32.4	17.172
18	11	13	17.26	2.1769	3	28	21.1	17.205
19	11	15	27.89	2.1775	3	11	7.8	17.237
20	11	17	38.56	2.1782	2	53	52.6	17.267
21	11	19	49.27	2.1788	2	36	35.7	17.296
22	11	22	0.02	2.1796	2	19	17.1	17.322
23	11	24	10.82	2.1805	N. 2	1	57.0	17.347

FRIDAY 24.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	11	26	21.68	2.1815	N. 1	44	35.4	17.371
1	11	28	32.60	2.1825	1	27	12.5	17.392
2	11	30	43.58	2.1836	1	9	48.3	17.412
3	11	32	54.63	2.1848	0	52	23.0	17.430
4	11	35	5.76	2,1861	0	34	56.7	17.446
5	11	37	16.97	2.1875	0	17	29.5	17.461
6	11	39	28.26	2.1889	N. 0	0	1.4	17.474
7	11	41	39.64	2.1905	S. 0	17	27.4	17.484
8	11	43	51.12	2.1921	0	34	56.7	17.492
9	11	46	2.69	2.1938	0	52	26.5	17.500
10	11	48	14.37	2.1956	1	9	56.7	17.505
11	11	50	26.16	2.1975	1	27	27.1	17.508
12	11	52	38.07	2.1995	1	44	57.7	17.510
13	11	54	50.10	2.2015	2	2	28.3	17.509
14	11	57	2.25	2.2036	2	19	58.8	17.507
15	11	59	14.53	2.2058	2	37	29.1	17.503
16	12	1	26.94	2.2081	2	54	59.1	17.497
17	12	3	39.50	2.2105	3	12	28.7	17.488
18	12	5	52.20	2.2129	3	29	57.7	17.478
19	12	8	5.05	2.2155	3	47	26.1	17.467
20	12	10	18.06	2.2182	4	4	53.7	17.453
21	12	12	31.23	2.2208	4	22	20.4	17.437
22	12	14	44.56	2.2236	4	39	46.1	17.418
23	12	16	58.06	2.2265	4	57	10.6	17.398
24	12	19	11.74	2.2295	S. 5	14	33.9	17.377

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 19 11.74	2.2295	S. 5 14 33.9	17.377
1	12 21 25.60	2.2325	5 31 55.8	17.353
2	12 23 39.64	2.2356	5 49 16.2	17.328
3	12 25 53.87	2.2388	6 6 35.1	17.300
4	12 28 8.30	2.2421	6 23 52.2	17.270
5	12 30 22.92	2.2454	6 41 7.5	17.238
6	12 32 37.74	2.2488	6 58 20.8	17.204
7	12 34 52.77	2.2523	7 15 32.0	17.168
8	12 37 8.02	2.2559	7 32 41.0	17.130
9	12 39 23.48	2.2595	7 49 47.6	17.089
10	12 41 39.16	2.2632	8 6 51.7	17.047
11	12 43 55.07	2.2670	8 23 53.3	17.004
12	12 46 11.20	2.2708	8 40 52.2	16.958
13	12 48 27.57	2.2748	8 57 48.3	16.910
14	12 50 44.18	2.2788	9 14 41.4	16.859
15	12 53 1.03	2.2828	9 31 31.4	16.807
16	12 55 18.12	2.2870	9 48 18.2	16.752
17	12 57 35.47	2.2912	10 5 1.6	16.695
18	12 59 53.07	2.2955	10 21 41.6	16.637
19	13 2 10.93	2.2998	10 38 18.0	16.576
20	13 4 29.05	2.3042	10 54 50.7	16.512
21	13 6 47.43	2.3086	11 11 19.5	16.447
22	13 9 6.08	2.3131	11 27 44.4	16.381
23	13 11 25.00	2.3177	S.11 44 5.2	16.312

SUNDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 13 44.20	2.3223	S.12 0 21.8	16.240
1	13 16 3.68	2.3270	12 16 34.0	16.167
2	13 18 23.44	2.3317	12 32 41.8	16.092
3	13 20 43.48	2.3364	12 48 45.0	16.013
4	13 23 3.81	2.3412	13 4 43.4	15.933
5	13 25 24.43	2.3461	13 20 37.0	15.852
6	13 27 45.34	2.3510	13 36 25.6	15.768
7	13 30 6.55	2.3560	13 52 9.1	15.682
8	13 32 28.06	2.3610	14 7 47.4	15.593
9	13 34 49.87	2.3661	14 23 20.3	15.503
10	13 37 11.99	2.3712	14 38 47.8	15.411
11	13 39 34.41	2.3762	14 54 9.6	15.316
12	13 41 57.13	2.3813	15 9 25.7	15.219
13	13 44 20.16	2.3865	15 24 35.9	15.120
14	13 46 43.51	2.3917	15 39 40.1	15.020
15	13 49 7.17	2.3969	15 54 38.3	14.917
16	13 51 31.14	2.4022	16 9 30.2	14.812
17	13 53 55.43	2.4075	16 24 15.7	14.705
18	13 56 20.04	2.4128	16 38 54.8	14.597
19	13 58 44.97	2.4181	16 53 27.3	14.485
20	14 1 10.21	2.4234	17 7 53.0	14.372
21	14 3 35.77	2.4287	17 22 11.9	14.257
22	14 6 1.65	2.4340	17 36 23.8	14.139
23	14 8 27.85	2.4393	17 50 28.6	14.020
24	14 10 54.37	2.4447	S.18 4 26.2	13.899

MONDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 10 54.37	2.4447	S.18 4 26.2	13.899
1	14 13 21.21	2.4500	18 18 16.5	13.776
2	14 15 48.37	2.4554	18 31 59.3	13.651
3	14 18 15.86	2.4608	18 45 34.6	13.524
4	14 20 43.67	2.4661	18 59 2.2	13.395
5	14 23 11.79	2.4713	19 12 22.0	13.263
6	14 25 40.22	2.4765	19 25 33.8	13.130
7	14 28 8.97	2.4818	19 38 37.6	12.996
8	14 30 38.04	2.4871	19 51 33.3	12.860
9	14 33 7.43	2.4924	20 4 20.8	12.722
10	14 35 37.13	2.4975	20 16 59.9	12.581
11	14 38 7.13	2.5026	20 29 30.5	12.439
12	14 40 37.44	2.5077	20 41 52.6	12.296
13	14 43 8.06	2.5128	20 54 6.0	12.150
14	14 45 38.98	2.5179	21 6 10.6	12.002
15	14 48 10.21	2.5229	21 18 6.3	11.853
16	14 50 41.73	2.5278	21 29 53.0	11.702
17	14 53 13.55	2.5327	21 41 30.6	11.550
18	14 55 45.66	2.5376	21 52 59.0	11.397
19	14 58 18.06	2.5423	22 4 18.2	11.241
20	15 0 50.74	2.5471	22 15 27.9	11.083
21	15 3 23.71	2.5518	22 26 28.1	10.923
22	15 5 56.96	2.5563	22 37 18.7	10.763
23	15 8 30.47	2.5608	S.22 47 59.7	10.602

TUESDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 11 4.25	2.5653	S.22 58 30.9	10.438
1	15 13 38.30	2.5696	23 8 52.2	10.273
2	15 16 12.61	2.5739	23 19 3.6	10.107
3	15 18 47.17	2.5781	23 29 5.0	9.939
4	15 21 21.98	2.5822	23 38 56.3	9.770
5	15 23 57.03	2.5862	23 48 37.4	9.600
6	15 26 32.32	2.5901	23 58 8.3	9.428
7	15 29 7.84	2.5939	24 7 28.8	9.255
8	15 31 43.59	2.5976	24 16 38.9	9.081
9	15 34 19.55	2.6011	24 25 38.5	8.905
10	15 36 55.72	2.6046	24 34 27.5	8.728
11	15 39 32.10	2.6080	24 43 5.9	8.551
12	15 42 8.68	2.6112	24 51 33.6	8.372
13	15 44 45.45	2.6144	24 59 50.5	8.192
14	15 47 22.41	2.6174	25 7 56.6	8.012
15	15 49 59.54	2.6202	25 15 51.9	7.831
16	15 52 36.84	2.6230	25 23 36.3	7.647
17	15 55 14.30	2.6257	25 31 9.6	7.463
18	15 57 51.92	2.6282	25 38 31.9	7.
19	16 0 29.69	2.6306	25 45 43.1	7.
20	16 3 7.59	2.6328	25 52 43.2	6.
21	16 5 45.62	2.6349	25 59 32.1	6.
22	16 8 23.78	2.6368	26 6 9.8	6.
23	16 11 2.04	2.6385	26 12 36.2	6.
24	16 13 40.40	2.6402	S.26 18 51.3	6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 29.			
	h m s	s	° ′ ″	″
0	16 13 40.40	2.6402	S.26 18 51.3	6.157
1	16 16 18.86	2.6418	26 24 55.1	5.968
2	16 18 57.41	2.6431	26 30 47.5	5.778
3	16 21 36.03	2.6442	26 36 28.5	5.588
4	16 24 14.72	2.6453	26 41 58.1	5.397
5	16 26 53.47	2.6462	26 47 16.2	5.207
6	16 29 32.26	2.6468	26 52 22.9	5.016
7	16 32 11.09	2.6474	26 57 18.1	4.824
8	16 34 49.95	2.6478	27 2 1.8	4.632
9	16 37 28.83	2.6481	27 6 33.9	4.439
10	16 40 7.72	2.6482	27 10 54.5	4.247
11	16 42 46.61	2.6480	27 15 3.6	4.055
12	16 45 25.48	2.6477	27 19 1.1	3.863
13	16 48 4.33	2.6473	27 22 47.1	3.671
14	16 50 43.16	2.6468	27 26 21.6	3.478
15	16 53 21.95	2.6461	27 29 44.5	3.286
16	16 56 0.69	2.6451	27 32 55.9	3.093
17	16 58 39.36	2.6439	27 35 55.7	2.901
18	17 1 17.96	2.6427	27 38 44.0	2.709
19	17 3 56.49	2.6413	27 41 20.8	2.518
20	17 6 34.92	2.6397	27 43 46.1	2.327
21	17 9 13.25	2.6380	27 46 0.0	2.136
22	17 11 51.48	2.6361	27 48 2.4	1.945
23	17 14 29.58	2.6339	S.27 49 53.4	1.754
	THURSDAY 30.			
0	17 17 7.55	2.6317	S.27 51 32.9	1.563
1	17 19 45.38	2.6293	27 53 1.0	1.374
2	17 22 23.06	2.6268	27 54 17.8	1.186
3	17 25 0.59	2.6240	27 55 23.3	0.997
4	17 27 37.94	2.6210	27 56 17.5	0.809
5	17 30 15.11	2.6180	27 57 0.4	0.622
6	17 32 52.10	2.6147	27 57 32.1	0.435
7	17 35 28.89	2.6114	27 57 52.6	0.249
8	17 38 5.47	2.6078	27 58 2.0	−0.064
9	17 40 41.83	2.6042	27 58 0.3	+0.120
10	17 43 17.97	2.6003	27 57 47.6	0.304
11	17 45 53.87	2.5963	27 57 23.9	0.487
12	17 48 29.53	2.5922	27 56 49.2	0.669
13	17 51 4.94	2.5880	27 56 3.6	0.850
14	17 53 40.09	2.5835	27 55 7.2	1.029
15	17 56 14.96	2.5789	27 54 0.1	1.208
16	17 58 49.56	2.5743	27 52 42.3	1.386
17	18 1 23.88	2.5695	27 51 13.8	1.563
18	18 3 57.90	2.5645	27 49 34.7	1.739
19	18 6 31.62	2.5594	27 47 45.1	1.914
20	18 9 5.03	2.5542	27 45 45.0	2.088
21	18 11 38.12	2.5488	27 43 34.5	2.261
22	18 14 10.89	2.5434	27 41 13.7	2.432
23	18 16 43.33	2.5378	27 38 42.6	2.602
24	18 19 15.43	2.5321	S.27 36 1.4	2.771

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY, MAY 1.			
	h m s	s	° ′ ″	″
0	18 19 15.43	2.5321	S.27 36 1.4	2.771

PHASES OF THE MOON.

			d	h	m
☾	Last Quarter . .	April	4	12	24.1
●	New Moon		12	16	22.8
☽	First Quarter		20	10	46.7
○	Full Moon		27	1	47.2

			d	h
☾	Apogee	April	10	15.7
☾	Perigee		25	21.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Regulus	W.	89 41 55	2247	91 29 13	2264	93 16 5	2283	95 2 30	2301
	Spica	W.	35 42 22	2253	37 29 30	2270	39 16 13	2288	41 2 30	2306
	α Aquilæ	E.	68 53 15	3103	67 25 9	3143	65 57 52	3187	64 31 27	3231
	Mars	E.	83 49 47	2482	82 8 9	2502	80 26 58	2520	78 46 13	2539
	Fomalhaut	E.	92 10 45	2545	90 30 34	2562	88 50 47	2581	87 11 26	2600
	Venus	E.	108 3 33	2638	106 25 29	2657	104 47 51	2677	103 10 40	2696
	Sun	E.	133 59 10	2569	132 19 32	2587	130 40 19	2606	129 1 32	2624
2	Regulus	W.	103 47 54	2394	105 31 38	2412	107 14 55	2431	108 57 45	2450
	Spica	W.	49 47 20	2398	51 30 58	2417	53 14 9	2435	54 56 54	2454
	α Aquilæ	E.	57 33 42	3504	56 13 22	3568	54 54 13	3638	53 36 20	3711
	Mars	E.	70 29 10	2638	68 51 6	2658	67 13 30	2678	65 36 21	2698
	Fomalhaut	E.	79 1 29	2706	77 24 57	2729	75 48 55	2753	74 13 25	2777
	Venus	E.	95 11 28	2799	93 36 59	2820	92 2 57	2841	90 29 22	2862
	Sun	E.	120 54 9	2723	119 18 0	2744	117 42 18	2764	116 7 3	2784
3	Spica	W.	63 24 3	2547	65 4 11	2565	66 43 54	2583	68 23 12	2601
	Saturn	W.	38 30 43	2621	40 9 10	2632	41 47 21	2645	43 25 15	2657
	Mars	E.	57 37 11	2797	56 2 39	2817	54 28 33	2836	52 54 52	2855
	Fomalhaut	E.	66 24 9	2909	64 52 1	2937	63 20 29	2966	61 49 34	2997
	Venus	E.	82 48 8	2965	81 17 12	2985	79 46 41	3005	78 16 35	3026
	Sun	E.	108 17 19	2883	106 44 39	2904	105 12 25	2924	103 40 36	2942
4	Spica	W.	76 33 42	2687	78 10 39	2704	79 47 14	2720	81 23 27	2736
	Saturn	W.	51 30 17	2726	53 6 22	2740	54 42 9	2754	56 17 37	2768
	Antares	W.	30 39 48	2686	32 16 47	2702	33 53 24	2719	35 29 39	2735
	Mars	E.	45 12 28	2947	43 41 9	2965	42 10 12	2982	40 39 37	2999
	Fomalhaut	E.	54 24 45	3163	52 57 52	3200	51 31 43	3240	50 6 21	3281
	Venus	E.	70 52 12	3123	69 24 30	3141	67 57 10	3159	66 30 12	3178
	Sun	E.	96 7 30	3036	94 38 2	3055	93 8 57	3072	91 40 13	3089
5	Spica	W.	89 19 26	2811	90 53 40	2825	92 27 35	2838	94 1 13	2852
	Saturn	W.	64 10 31	2835	65 44 14	2847	67 17 41	2859	68 50 52	2872
	Antares	W.	43 25 49	2808	45 0 6	2823	46 34 4	2836	48 7 45	2850
	Fomalhaut	E.	43 12 16	3525	41 52 19	3584	40 33 27	3648	39 15 44	3717
	Venus	E.	59 20 37	3262	57 55 41	3278	56 31 4	3294	55 6 45	3308
	Sun	E.	84 21 41	3171	82 54 57	3186	81 28 31	3200	80 2 22	3215
6	Spica	W.	101 45 19	2912	103 17 23	2923	104 49 13	2933	106 20 50	2943
	Saturn	W.	76 33 0	2927	78 4 44	2939	79 36 14	2948	81 7 32	2958
	Antares	W.	55 52 3	2910	57 24 9	2920	58 56 2	2931	60 27 41	2941
	Venus	E.	48 9 23	3379	46 46 42	3392	45 24 16	3405	44 2 5	3416
	Sun	E.	72 55 47	3282	71 31 14	3294	70 6 55	3305	68 42 49	3317
7	Saturn	W.	88 41 8	3001	90 11 19	3009	91 41 21	3017	93 11 13	3023
	Antares	W.	68 2 58	2985	69 33 29	2993	71 3 50	3001	72 34 2	3008
	Venus	E.	37 14 26	3473	35 53 32	3483	34 32 49	3493	33 12 17	3504
	Sun	E.	61 45 28	3367	60 22 34	3375	58 59 49	3384	57 37 14	339
8	Saturn	W.	100 38 33	3054	102 7 39	3059	103 36 39	3065	105 5 32	306
	Antares	W.	80 2 59	3038	81 32 25	3043	83 1 45	3047	84 31 0	305
	Sun	E.	50 46 30	3428	49 24 45	3433	48 3 6	3439	46 41 34	344

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Regulus	W.	96 48 29	2320	98 34 0	2337	100 19 5	2356	102 3 43	2375
	Spica	W.	42 48 21	2324	44 33 46	2342	46 18 44	2361	48 3 15	2379
	α Aquilæ	E.	63 5 55	3280	61 41 20	3331	60 17 44	3385	58 55 10	3443
	Mars	E.	77 5 54	2559	75 26 2	2579	73 46 38	2598	72 7 40	2618
	Fomalhaut	E.	85 32 31	2620	83 54 3	2640	82 16 3	2661	80 38 31	2684
	Venus	E.	101 33 55	2716	99 57 37	2738	98 21 47	2758	96 46 24	2779
	Sun	E.	127 23 10	2644	125 45 15	2663	124 7 46	2684	122 30 44	2704
2	Regulus	W.	110 40 8	2469	112 22 5	2488	114 3 35	2507	115 44 39	2525
	Spica	W.	56 39 12	2472	58 21 4	2491	60 2 30	2510	61 43 30	2529
	α Aquilæ	E.	52 19 45	3791	51 4 33	3875	49 50 48	3965	48 38 34	4063
	Mars	E.	63 59 38	2718	62 23 22	2738	60 47 32	2757	59 12 8	2778
	Fomalhaut	E.	72 38 27	2802	71 4 2	2828	69 30 10	2854	67 56 52	2881
	Venus	E.	88 56 14	2883	87 23 33	2903	85 51 18	2924	84 19 30	2945
	Sun	E.	114 32 14	2805	112 57 52	2824	111 23 55	2844	109 50 24	2864
3	Spica	W.	70 2 6	2619	71 40 35	2636	73 18 41	2654	74 56 23	2671
	Saturn	W.	45 2 52	2671	46 40 11	2685	48 17 11	2698	49 53 53	2712
	Mars	E.	51 21 35	2873	49 48 42	2893	48 16 14	2911	46 44 9	2930
	Fomalhaut	E.	60 19 17	3028	58 49 39	3060	57 20 40	3093	55 52 22	3127
	Venus	E.	76 46 54	3045	75 17 37	3065	73 48 45	3085	72 20 17	3104
	Sun	E.	102 9 11	2962	100 38 11	2981	99 7 34	2999	97 37 20	3018
4	Spica	W.	82 59 19	2751	84 34 51	2767	86 10 2	2782	87 44 54	2797
	Saturn	W.	57 52 47	2782	59 27 39	2795	61 2 14	2808	62 36 31	2821
	Antares	W.	37 5 33	2750	38 41 7	2766	40 16 20	2780	41 51 14	2795
	Mars	E.	39 9 23	3016	37 39 30	3032	36 9 57	3048	34 40 44	3064
	Fomalhaut	E.	48 41 47	3324	47 18 3	3369	45 55 11	3417	44 33 14	3470
	Venus	E.	65 3 36	3195	63 37 21	3212	62 11 26	3230	60 45 52	3246
	Sun	E.	90 11 50	3106	88 43 48	3123	87 16 6	3139	85 48 44	3155
5	Spica	W.	95 34 34	2865	97 7 38	2876	98 40 27	2889	100 13 0	2900
	Saturn	W.	70 23 47	2883	71 56 27	2895	73 28 52	2906	75 1 3	2917
	Antares	W.	49 41 8	2862	51 14 15	2875	52 47 6	2887	54 19 42	2898
	Fomalhaut	E.	37 59 15	3792	36 44 5	3876	35 30 21	3967	34 18 9	4069
	Venus	E.	53 42 43	3324	52 18 59	3338	50 55 31	3351	49 32 19	3365
	Sun	E.	78 36 31	3229	77 10 56	3243	75 45 38	3256	74 20 35	3269
6	Spica	W.	107 52 14	2954	109 23 25	2962	110 54 25	2972	112 25 13	2980
	Saturn	W.	82 38 38	2967	84 9 32	2976	85 40 15	2985	87 10 47	2993
	Antares	W.	61 59 8	2951	63 30 22	2960	65 1 25	2969	66 32 17	2977
	Venus	E.	42 40 7	3428	41 18 22	3440	39 56 51	3451	38 35 32	3463
	Sun	E.	67 18 57	3327	65 55 17	3338	64 31 49	3348	63 8 33	3358
7	Saturn	W.	94 40 57	3030	96 10 32	3036	97 40 0	3043	99 9 20	3048
	Antares	W.	74 4 5	3014	75 34 0	3021	77 3 47	3026	78 33 27	3033
	Venus	E.	31 51 57	3513	30 31 47	3524	29 11 49	3534	27 52 2	3543
	Sun	E.	56 14 48	3400	54 52 31	3408	53 30 23	3415	52 8 23	3421
8	Saturn	W.	106 34 20	3073	108 3 2	3078	109 31 39	3081	111 0 12	3085
	Antares	W.	86 0 9	3055	87 29 14	3059	88 58 14	3062	90 27 10	3065
	Sun	E.	45 20 8	3450	43 58 48	3454	42 37 33	3460	41 16 24	3463

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Antares W.	91 56 3	3067	93 24 53	3069	94 53 40	3071	96 22 25	3073
	a Aquilæ W.	47 34 26	4600	48 36 51	4533	49 40 14	4472	50 44 31	4414
	SUN E.	39 55 19	3468	38 34 19	3472	37 13 24	3477	35 52 34	3480
10	Antares W.	103 45 42	3078	105 14 18	3078	106 42 54	3078	108 11 30	3078
	a Aquilæ W.	56 17 43	4186	57 26 22	4151	58 35 35	4116	59 45 21	4085
	SUN E.	29 9 28	3501	27 49 5	3505	26 28 46	3510	25 8 33	3515
14	SUN W.	15 14 55	3500	16 35 19	3476	17 56 10	3454	19 17 26	3434
	Pollux E.	71 51 2	2999	70 20 48	2993	68 50 27	2989	67 20 0	2983
	JUPITER E.	80 10 16	3016	78 40 23	3011	77 10 24	3005	75 40 18	3001
	Regulus E.	108 44 18	2991	107 13 54	2985	105 43 23	2980	104 12 45	2974
15	SUN W.	26 8 39	3360	27 31 41	3349	28 54 56	3338	30 18 24	3327
	Pollux E.	59 46 0	2954	58 14 50	2948	56 43 32	2942	55 12 7	2935
	JUPITER E.	68 8 4	2970	66 37 14	2965	65 6 17	2958	63 35 12	2951
	Regulus E.	96 37 47	2944	95 6 24	2938	93 34 53	2931	92 3 13	2924
16	SUN W.	37 18 49	3275	38 43 30	3265	40 8 23	3254	41 33 28	3343
	Pollux E.	47 32 53	2901	46 0 36	2894	44 28 10	2887	42 55 34	2880
	JUPITER E.	55 57 33	2915	54 25 33	2908	52 53 24	2900	51 21 5	2891
	Regulus E.	84 22 40	2887	82 50 5	2879	81 17 19	2871	79 44 23	2863
17	SUN W.	48 42 2	3190	50 8 23	3178	51 34 58	3168	53 1 46	3157
	JUPITER E.	43 36 48	2848	42 3 23	2839	40 29 46	2830	38 55 57	2821
	Regulus E.	71 56 58	2818	70 22 54	2808	68 48 37	2799	67 14 8	2788
18	SUN W.	60 19 15	3096	61 47 29	3083	63 15 59	3071	64 44 44	3058
	Regulus E.	59 18 18	2736	57 42 26	2724	56 6 18	2713	54 29 55	2701
	Spica E.	113 19 58	2738	111 44 9	2727	110 8 5	2716	108 31 46	2704
19	SUN W.	72 12 36	2989	73 43 2	2976	75 13 45	2962	76 44 46	2946
	Aldebaran W.	34 58 31	2863	36 31 37	2834	38 5 21	2805	39 39 42	2779
	Regulus E.	46 23 58	2639	44 45 56	2626	43 7 36	2613	41 28 59	2599
	Spica E.	100 26 7	2641	98 48 8	2629	97 9 52	2615	95 31 18	2601
20	SUN W.	84 24 35	2871	85 57 31	2856	87 30 46	2840	89 4 22	2825
	Aldebaran W.	47 39 35	2663	49 17 4	2643	50 55 1	2623	52 33 25	2602
	Spica E.	87 13 47	2532	85 33 18	2518	83 52 30	2504	82 11 22	2489
	SATURN E.	111 27 13	2550	109 47 9	2534	108 6 43	2519	106 25 56	2504
21	SUN W.	96 57 29	2745	98 33 9	2729	100 9 11	2713	101 45 33	2697
	Aldebaran W.	60 52 7	2508	62 33 9	2490	64 14 36	2472	65 56 28	2455
	Spica E.	73 40 31	2415	71 57 18	2400	70 13 43	2385	68 29 47	2371
	SATURN E.	97 56 42	2427	96 13 46	2412	94 30 29	2397	92 46 50	2382
22	SUN W.	109 52 44	2618	111 31 14	2604	113 10 4	2588	114 49 15	2574
	Aldebaran W.	74 31 50	2372	76 16 5	2356	78 0 43	2341	79 45 43	2326
	Pollux W.	31 24 11	2320	33 9 42	2303	34 55 37	2286	36 41 57	2270
	Spica E.	59 44 45	2296	57 58 40	2282	56 12 14	2267	54 25 26	2253
	SATURN E.	84 3 12	2309	82 17 25	2294	80 31 17	2281	78 44 49	2266
	Antares E.	105 37 14	2293	103 51 4	2279	102 4 33	2264	100 17 41	2250

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
9	Antares	W.	97 51 7	3075	99 19 47	3075	100 48 27	3077	102 17 5	3078
	α Aquilæ	W.	51 49 40	4361	52 55 37	4313	54 2 18	4267	55 9 41	4226
	SUN	E.	34 31 48	3484	33 11 6	3488	31 50 29	3492	30 29 56	3497
10	Antares	W.	109 40 7	3077	111 8 45	3077	112 37 23	3076	114 6 2	3074
	α Aquilæ	W.	60 55 37	4055	62 6 22	4029	63 17 33	4003	64 29 10	3978
	SUN	E.	23 48 25	3521	22 28 24	3529	21 8 32	3538	19 48 50	3551
14	SUN	W.	20 39 4	3416	22 1 2	3400	23 23 18	3386	24 45 51	3372
	Pollux	E.	65 49 26	2977	64 18 45	2972	62 47 57	2966	61 17 2	2961
	JUPITER	E.	74 10 6	2995	72 39 47	2989	71 9 20	2983	69 38 46	2977
	Regulus	E.	102 42 0	2969	101 11 8	2963	99 40 9	2957	98 9 2	2950
15	SUN	W.	31 42 4	3316	33 5 57	3306	34 30 2	3295	35 54 19	3284
	Pollux	E.	53 40 33	2929	52 8 51	2922	50 37 0	2916	49 5 1	2909
	JUPITER	E.	62 3 58	2945	60 32 36	2937	59 1 4	2930	57 29 23	2923
	Regulus	E.	90 31 25	2917	88 59 28	2909	87 27 21	2902	85 55 5	2895
16	SUN	W.	42 58 46	3233	44 24 16	3222	45 49 59	3212	47 15 54	3201
	Pollux	E.	41 22 49	2872	39 49 54	2865	38 16 50	2857	36 43 36	2850
	JUPITER	E.	49 48 35	2883	48 15 55	2875	46 43 4	2866	45 10 2	2857
	Regulus	E.	78 11 17	2855	76 38 0	2845	75 4 31	2836	73 30 50	2828
17	SUN	W.	54 28 47	3145	55 56 2	3133	57 23 32	3121	58 51 16	3109
	JUPITER	E.	37 21 56	2811	35 47 42	2801	34 13 15	2791	32 38 35	2782
	Regulus	E.	65 39 25	2779	64 4 29	2769	62 29 20	2757	60 53 56	2747
18	SUN	W.	66 13 45	3044	67 43 3	3031	69 12 37	3018	70 42 28	3004
	Regulus	E.	52 53 16	2689	51 16 21	2677	49 39 10	2665	48 1 43	2652
	Spica	E.	106 55 11	2692	105 18 20	2679	103 41 12	2667	102 3 48	2655
19	SUN	W.	78 16 6	2931	79 47 45	2917	81 19 42	2901	82 51 59	2887
	Aldebaran	W.	41 14 37	2754	42 50 5	2730	44 26 5	2707	46 2 35	2685
	Regulus	E.	39 50 3	2586	38 10 49	2572	36 31 16	2559	34 51 24	2544
	Spica	E.	93 52 25	2588	92 13 14	2574	90 33 44	2561	88 53 55	2547
20	SUN	W.	90 38 18	2808	92 12 35	2793	93 47 12	2777	95 22 10	2761
	Aldebaran	W.	54 12 17	2583	55 51 35	2564	57 31 20	2545	59 11 31	2527
	Spica	E.	80 29 53	2475	78 48 4	2460	77 5 54	2445	75 23 23	2430
	SATURN	E.	104 44 48	2489	103 3 19	2473	101 21 28	2458	99 39 16	2443
21	SUN	W.	103 22 17	2681	104 59 22	2666	106 36 48	2650	108 14 35	2634
	Aldebaran	W.	67 38 44	2438	69 21 25	2421	71 4 30	2405	72 47 58	2388
	Spica	E.	66 45 30	2355	65 0 51	2341	63 15 51	2326	61 30 29	2311
	SATURN	E.	91 2 49	2367	89 18 27	2352	87 33 43	2337	85 48 38	2323
22	SUN	W.	116 28 46	2559	118 8 37	2545	119 48 48	2530	121 29 19	2517
	Aldebaran	W.	81 31 5	2311	83 16 48	2296	85 2 53	2283	86 49 18	2268
	Pollux	W.	38 28 40	2255	40 15 46	2239	42 3 15	2225	43 51 5	2210
	Spica	E.	52 38 18	2239	50 50 49	2226	49 3 0	2212	47 14 51	2199
	SATURN	E.	76 58 0	2253	75 10 52	2240	73 23 24	2227	71 35 37	2214
	Antares	E.	98 30 28	2236	96 42 54	2223	94 55 0	2208	93 6 45	2195

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	SUN	W.	123 10 8	2504	124 51 16	2492	126 32 41	2479	128 14 24	2467
	Aldebaran	W.	88 36 4	2256	90 23 9	2243	92 10 33	2231	93 58 15	2219
	Pollux	W.	45 39 17	2196	47 27 50	2183	49 16 43	2170	51 5 56	2157
	JUPITER	W.	36 34 28	2215	38 22 33	2202	40 10 58	2188	41 59 43	2176
	Spica	E.	45 26 22	2186	43 37 34	2174	41 48 28	2163	39 59 4	2151
	SATURN	E.	69 47 31	2202	67 59 7	2191	66 10 26	2180	64 21 28	2170
	Antares	E.	91 18 10	2182	89 29 16	2169	87 40 2	2157	85 50 29	2145
24	Pollux	W.	60 16 36	2101	62 7 34	2091	63 58 47	2082	65 50 14	2073
	JUPITER	W.	51 7 53	2121	52 58 20	2112	54 49 1	2103	56 39 56	2094
	Regulus	W.	23 17 51	2091	25 9 4	2081	27 0 32	2073	28 52 13	2064
	SATURN	E.	55 12 58	2126	53 22 38	2119	51 32 8	2113	49 41 29	2108
	Antares	E.	76 38 24	2091	74 47 11	2081	72 55 43	2073	71 4 2	2064
25	Pollux	W.	75 10 31	2040	77 3 3	2035	78 55 43	2031	80 48 29	2027
	JUPITER	W.	65 57 29	2061	67 49 28	2057	69 41 34	2052	71 33 47	2049
	Regulus	W.	38 13 36	2032	40 6 21	2026	41 59 14	2023	43 52 13	2019
	SATURN	E.	40 26 57	2103	38 36 2	2105	36 45 11	2111	34 54 28	2117
	Antares	E.	61 42 41	2032	59 49 56	2027	57 57 4	2023	56 4 5	2019
	α Aquilæ	E.	112 7 41	2872	110 34 46	2846	109 1 18	2824	107 27 21	2804
26	Pollux	W.	90 13 19	2021	92 6 21	2022	93 59 21	2024	95 52 18	2026
	JUPITER	W.	80 55 47	2043	82 48 14	2044	84 40 40	2046	86 33 3	2048
	Regulus	W.	53 18 3	2013	55 11 17	2014	57 4 29	2016	58 57 39	2018
	Antares	E.	46 38 16	2014	44 45 3	2014	42 51 51	2016	40 58 42	2019
	α Aquilæ	E.	99 32 10	2741	97 56 24	2735	96 20 30	2731	94 44 31	2730
27	Pollux	W.	105 15 45	2050	107 8 2	2056	109 0 9	2064	110 52 4	2072
	JUPITER	W.	95 53 37	2072	97 45 20	2078	99 36 53	2086	101 28 14	2094
	Regulus	W.	68 22 9	2041	70 14 39	2048	72 6 59	2055	73 59 8	2063
	α Aquilæ	E.	86 45 1	2752	85 9 30	2763	83 34 13	2775	81 59 13	2790
	Fomalhaut	E.	112 2 1	2392	110 18 15	2391	108 34 27	2391	106 50 39	2392
28	JUPITER	W.	110 41 28	2145	112 31 18	2157	114 20 50	2170	116 10 2	2183
	Regulus	W.	83 16 24	2113	85 7 3	2125	86 57 24	2137	88 47 26	2150
	Spica	W.	29 17 4	2122	31 7 29	2134	32 57 37	2145	34 47 27	2157
	α Aquilæ	E.	74 9 52	2895	72 37 27	2923	71 5 37	2953	69 34 25	2985
	Fomalhaut	E.	98 12 53	2422	96 29 49	2431	94 46 58	2442	93 4 23	2453
	MARS	E.	110 39 42	2346	108 54 49	2358	107 10 14	2371	105 25 58	2385
29	Regulus	W.	97 52 27	2223	99 40 21	2239	101 27 51	2255	103 14 57	2271
	Spica	W.	43 51 44	2227	45 39 31	2243	47 26 55	2259	49 13 55	2275
	α Aquilæ	E.	62 9 40	3191	60 43 20	3241	59 17 59	3295	57 53 42	3353
	Fomalhaut	E.	84 36 10	2530	82 55 38	2548	81 15 32	2567	79 35 52	2587
	MARS	E.	96 49 47	2461	95 7 39	2478	93 25 55	2495	91 44 35	2512
	α Pegasi	E.	106 32 20	2447	104 49 52	2458	103 7 40	2471	101 25 46	2485
30	Spica	W.	58 2 47	2362	59 47 17	2379	61 31 22	2397	63 15 1	2415
	SATURN	W.	35 2 6	2443	36 44 40	2453	38 27 0	2463	40 9 5	2475
	Fomalhaut	E.	71 24 48	2702	69 48 11	2728	68 12 8	2755	66 36 41	2782
	MARS	E.	83 24 7	2604	81 45 18	2624	80 6 56	2643	78 28 59	2663
	α Pegasi	E.	93 1 27	2564	91 21 43	2583	89 42 24	2600	88 3 29	2619

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	SUN	W.	129 56 23	2456	131 38 38	2445	133 21 8	2435	135 3 53	2426
	Aldebaran	W.	95 46 14	2208	97 34 30	2197	99 23 2	2187	101 11 49	2178
	Pollux	W.	52 55 28	2145	54 45 18	2133	56 35 27	2122	58 25 53	2111
	JUPITER	W.	43 48 46	2165	45 38 7	2153	47 27 46	2141	49 17 42	2132
	Spica	E.	38 9 22	2139	36 19 23	2129	34 29 8	2118	32 38 37	2109
	SATURN	E.	62 32 15	2159	60 42 46	2150	58 53 3	2141	57 3 7	2133
	Antares	E.	84 0 38	2134	82 10 30	2122	80 20 4	2111	78 29 22	2101
24	Pollux	W.	67 41 55	2065	69 33 48	2058	71 25 52	2051	73 18 7	2045
	JUPITER	W.	58 31 5	2086	60 22 26	2079	62 13 57	2073	64 5 38	2066
	Regulus	W.	30 44 7	2057	32 36 13	2049	34 28 31	2042	36 20 59	2037
	SATURN	E.	47 50 42	2104	45 59 49	2102	44 8 53	2101	42 17 55	2101
	Antares	E.	69 12 8	2057	67 20 2	2050	65 27 45	2043	63 35 18	2037
25	Pollux	W.	82 41 21	2025	84 34 17	2023	86 27 16	2021	88 20 17	2021
	JUPITER	W.	73 26 5	2046	75 18 27	2044	77 10 52	2043	79 3 19	2042
	Regulus	W.	45 45 17	2017	47 38 25	2015	49 31 36	2014	51 24 49	2013
	SATURN	E.	33 3 55	2127	31 13 37	2141	29 23 40	2159	27 34 10	2183
	Antares	E.	54 11 1	2017	52 17 53	2015	50 24 42	2014	48 31 29	2014
	α Aquilæ	E.	105 52 58	2786	104 18 12	2772	102 43 7	2759	101 7 45	2749
26	Pollux	W.	97 45 12	2029	99 38 1	2033	101 30 43	2038	103 23 18	2043
	JUPITER	W.	88 25 22	2052	90 17 36	2055	92 9 44	2060	94 1 45	2066
	Regulus	W.	60 50 45	2021	62 43 46	2025	64 36 41	2030	66 29 29	2035
	Antares	E.	39 5 37	2021	37 12 36	2026	35 19 42	2030	33 26 55	2035
	α Aquilæ	E.	93 8 31	2730	91 32 31	2732	89 56 34	2737	88 20 43	2744
27	Pollux	W.	112 43 46	2081	114 35 14	2091	116 26 27	2101	118 17 24	2112
	JUPITER	W.	103 19 22	2103	105 10 16	2113	107 0 56	2123	108 51 20	2134
	Regulus	W.	75 51 4	2072	77 42 47	2081	79 34 15	2091	81 25 28	2102
	α Aquilæ	E.	80 24 32	2807	78 50 13	2825	77 16 18	2846	75 42 50	2869
	Fomalhaut	E.	105 6 53	2395	103 23 11	2400	101 39 36	2405	99 56 9	2413
28	JUPITER	W.	117 58 55	2197	119 47 27	2211	121 35 38	2226	123 23 27	2241
	Regulus	W.	90 37 9	2164	92 26 31	2178	94 15 32	2192	96 4 11	2208
	Spica	W.	36 36 59	2170	38 26 11	2184	40 15 3	2198	42 3 34	2212
	α Aquilæ	E.	68 3 54	3021	66 34 7	3059	65 5 7	3100	63 36 57	3143
	Fomalhaut	E.	91 22 4	2467	89 40 4	2481	87 58 24	2497	86 17 6	2512
	MARS	E.	103 42 2	2399	101 58 26	2414	100 15 11	2429	98 32 18	2445
29	Regulus	W.	105 1 39	2287	106 47 57	2305	108 33 49	2322	110 19 16	2340
	Spica	W.	51 0 31	2292	52 46 42	2309	54 32 29	2326	56 17 51	2344
	α Aquilæ	E.	56 30 32	3416	55 8 34	3483	53 47 51	3555	52 28 28	3634
	Fomalhaut	E.	77 56 39	2608	76 17 55	2630	74 39 41	2653	73 1 58	2678
	MARS	E.	90 3 39	2530	88 23 8	2548	86 43 2	2567	85 3 22	2585
	α Pegasi	E.	99 44 12	2499	98 2 58	2515	96 22 5	2530	94 41 34	2548
30	Spica	W.	64 58 14	2433	66 41 1	2451	68 23 22	2470	70 5 17	2489
	SATURN	W.	41 50 53	2488	43 32 23	2501	45 13 35	2515	46 54 27	2530
	Fomalhaut	E.	65 1 50	2811	63 27 37	2842	61 54 4	2873	60 21 11	2905
	MARS	E.	76 51 29	2682	75 14 25	2702	73 37 48	2722	72 1 37	2741
	α Pegasi	E.	86 25 0	2638	84 46 57	2657	83 9 20	2678	81 32 10	2698

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	2 36 32.54	9.556	N.15 18 52.4	+44.88	15 54.12	66.13	3 5.58	0.299
Sat.	2	2 40 22.18	9.580	15 36 41.9	44.24	15 53.88	66.21	3 12.48	0.276
SUN.	3	2 44 12.38	9.604	15 54 16.0	43.60	15 53.64	66.29	3 18.82	0.252
Mon.	4	2 48 3.15	9.628	16 11 34.5	+42.94	15 53.41	66.37	3 24.59	0.228
Tues.	5	2 51 54.50	9.652	16 28 37.0	42.27	15 53.17	66.45	3 29.78	0.204
Wed.	6	2 55 46.44	9.676	16 45 23.2	41.58	15 52.94	66.53	3 34.38	0.180
Thur.	7	2 59 38.97	9.701	17 1 52.7	+40.88	15 52.72	66.61	3 38.40	0.156
Frid.	8	3 3 32.09	9.726	17 18 5.3	40.17	15 52.49	66.69	3 41.83	0.131
Sat.	9	3 7 25.79	9.750	17 34 0.7	39.44	15 52.27	66.77	3 44.67	0.106
SUN.	10	3 11 20.08	9.775	17 49 38.4	+38.70	15 52.06	66.85	3 46.93	0.082
Mon.	11	3 15 14.97	9.799	18 4 58.3	37.95	15 51.85	66.94	3 48.60	0.058
Tues.	12	3 19 10.43	9.823	18 20 0.0	37.19	15 51.64	67.02	3 49.70	0.034
Wed.	13	3 23 6.46	9.847	18 34 43.1	+36.41	15 51.44	67.10	3 50.21	0.010
Thur.	14	3 27 3.07	9.871	18 49 7.4	35.62	15 51.24	67.18	3 50.16	0.014
Frid.	15	3 31 0.24	9.894	19 3 12.7	34.81	15 51.05	67.26	3 49.55	0.037
Sat.	16	3 34 57.97	9.917	19 16 58.6	+34.00	15 50.86	67.34	3 48.38	0.060
SUN.	17	3 38 56.25	9.940	19 30 24.8	33.18	15 50.67	67.42	3 46.66	0.083
Mon.	18	3 42 55.07	9.962	19 43 31.0	32.35	15 50.49	67.50	3 44.41	0.105
Tues.	19	3 46 54.43	9.984	19 56 17.2	+31.50	15 50.32	67.58	3 41.62	0.127
Wed.	20	3 50 54.31	10.006	20 8 42.8	30.64	15 50.14	67.66	3 38.30	0.149
Thur.	21	3 54 54.72	10.028	20 20 47.8	29.77	15 49.97	67.73	3 34.46	0.171
Frid.	22	3 58 55.63	10.049	20 32 32.0	+28.89	15 49.81	67.80	3 30.12	0.192
Sat.	23	4 2 57.05	10.070	20 43 55.0	28.01	15 49.64	67.88	3 25.26	0.213
SUN.	24	4 6 58.98	10.091	20 54 56.6	27.12	15 49.48	67.95	3 19.92	0.233
Mon.	25	4 11 1.39	10.111	21 5 36.7	+26.22	15 49.32	68.02	3 14.08	0.253
Tues.	26	4 15 4.28	10.131	21 15 55.1	25.31	15 49.16	68.09	3 7.76	0.273
Wed.	27	4 19 7.65	10.150	21 25 51.4	24.39	15 49.01	68.15	3 0.97	0.293
Thur.	28	4 23 11.49	10.169	21 35 25.6	+23.46	15 48.86	68.22	2 53.71	0.312
Frid.	29	4 27 15.78	10.188	21 44 37.5	22.52	15 48.71	68.28	2 45.99	0.331
Sat.	30	4 31 20.52	10.207	21 53 26.8	21.58	15 48.56	68.34	2 37.83	0.349
SUN.	31	4 35 25.70	10.225	22 1 53.3	20.63	15 48.42	68.40	2 29.23	0.367
Mon.	32	4 39 31.30	10.242	N.22 9 56.9	+19.67	15 48.28	68.45	2 20.22	0.384

Note.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	2 36 33.04	9.557	N.15 18 54.7	+44.88	3 5.59	0.299	2 39 38.63
Sat.	2	2 40 22.69	9.580	15 36 44.3	44.24	3 12.50	0.276	2 43 35.19
SUN.	3	2 44 12.91	9.604	15 54 18.4	43.60	3 18.84	0.252	2 47 31.74
Mon.	4	2 48 3.70	9.628	16 11 37.0	+42.94	3 24.60	0.228	2 51 28.30
Tues.	5	2 51 55.06	9.652	16 28 39.5	42.26	3 29.79	0.204	2 55 24.86
Wed.	6	2 55 47.02	9.676	16 45 25.6	41.58	3 34.39	0.180	2 59 21.41
Thur.	7	2 59 39.56	9.701	17 1 55.2	+40.88	3 38.41	0.155	3 3 17.97
Frid.	8	3 3 32.68	9.726	17 18 7.8	40.17	3 41.84	0.131	3 7 14.52
Sat.	9	3 7 26.40	9.750	17 34 3.2	39.44	3 44.68	0.106	3 11 11.08
SUN.	10	3 11 20.70	9.775	17 49 40.9	+38.70	3 46.94	0.082	3 15 7.64
Mon.	11	3 15 15.59	9.799	18 5 0.8	37.95	3 48.61	0.058	3 19 4.19
Tues.	12	3 19 11.05	9.823	18 20 2.4	37.18	3 49.70	0.034	3 23 0.75
Wed.	13	3 23 7.09	9.847	18 34 45.5	+36.40	3 50.22	0.010	3 26 57.31
Thur.	14	3 27 3.70	9.871	18 49 9.8	35.61	3 50.16	0.014	3 30 53.86
Frid.	15	3 31 0.87	9.894	19 3 15.0	34.81	3 49.55	0.037	3 34 50.42
Sat.	16	3 34 58.60	9.917	19 17 0.8	+34.00	3 48.38	0.060	3 38 46.98
SUN.	17	3 38 56.88	9.939	19 30 26.9	33.18	3 46.66	0.083	3 42 43.54
Mon.	18	3 42 55.69	9.962	19 43 33.1	32.34	3 44.40	0.105	3 46 40.09
Tues.	19	3 46 55.04	9.984	19 56 19.1	+31.49	3 41.61	0.127	3 50 36.65
Wed.	20	3 50 54.92	10.006	20 8 44.7	30.64	3 38.29	0.149	3 54 33.21
Thur.	21	3 54 55.31	10.027	20 20 49.7	29.77	3 34.45	0.171	3 58 29.77
Frid.	22	3 58 56.22	10.048	20 32 33.7	+28.89	3 30.11	0.192	4 2 26.32
Sat.	23	4 2 57.63	10.069	20 43 56.6	28.01	3 25.25	0.213	4 6 22.88
SUN.	24	4 6 59.54	10.090	20 54 58.2	27.12	3 19.90	0.233	4 10 19.44
Mon.	25	4 11 1.93	10.110	21 5 38.2	+26.21	3 14.06	0.253	4 14 16.00
Tues.	26	4 15 4.81	10.130	21 15 56.4	25.30	3 7.74	0.273	4 18 12.55
Wed.	27	4 19 8.16	10.149	21 25 52.7	24.38	3 0.95	0.293	4 22 9.11
Thur.	28	4 23 11.98	10.168	21 35 26.8	+23.46	2 53.69	0.312	4 26 5.67
Frid.	29	4 27 16.25	10.187	21 44 38.5	22.52	2 45.97	0.331	4 30 2.23
Sat.	30	4 31 20.97	10.206	21 53 27.7	21.58	2 37.81	0.349	4 33 58.79
SUN.	31	4 35 26.13	10.224	22 1 54.2	20.62	2 29.22	0.367	4 37 55.34
Mon.	32	4 39 31.70	10.241	N.22 9 57.7	+19.66	2 20.20	0.384	4 41 51.90

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff for 1 Hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	122	41 34 50.5	34 26.6	145.37	− 0.63	0.0035738	+45.5	21 16 51.61
2	123	42 32 58.6	32 34.6	145.31	0.56	0.0036827	45.1	21 12 55.70
3	124	43 31 5.3	30 41.1	145.25	0.46	0.0037906	44.7	21 8 59.79
4	125	44 29 10.4	28 46.1	145.19	− 0.34	0.0038976	+44.3	21 5 3.88
5	126	45 27 14.2	26 49.7	145.13	0.21	0.0040035	43.9	21 1 7.97
6	127	46 25 16.8	24 52.1	145.08	− 0.07	0.0041082	43.3	20 57 12.06
7	128	47 23 17.9	22 53.1	145.03	+ 0.07	0.0042113	+42.6	20 53 16.15
8	129	48 21 17.7	20 52.7	144.97	0.19	0.0043130	42.0	20 49 20.24
9	130	49 19 16.2	18 51.1	144.91	0.30	0.0044130	41.3	20 45 24.33
10	131	50 17 13.2	16 47.9	144.85	+ 0.38	0.0045111	+40.5	20 41 28.42
11	132	51 15 8.8	14 43.3	144.79	0.44	0.0046075	39.7	20 37 32.51
12	133	52 13 2.9	12 37.3	144.72	0.47	0.0047017	38.9	20 33 36.60
13	134	53 10 55.5	10 29.7	144.66	+ 0.47	0.0047939	+38.0	20 29 40.69
14	135	54 8 46.6	8 20.7	144.60	0.44	0.0048842	37.2	20 25 44.78
15	136	55 6 36.2	6 10.1	144.53	0.39	0.0049726	36.4	20 21 48.86
16	137	56 4 24.1	3 57.8	144.46	+ 0.30	0.0050588	+35.6	20 17 52.95
17	138	57 2 10.5	1 44.1	144.40	0.19	0.0051433	34.8	20 13 57.04
18	139	57 59 55.2	59 28.6	144.33	+ 0.07	0.0052259	34.1	20 10 1.13
19	140	58 57 38.2	57 11.5	144.26	− 0.06	0.0053069	+33.4	20 6 5.22
20	141	59 55 19.7	54 52.8	144.20	0.19	0.0053862	32.7	20 2 9.31
21	142	60 52 59.6	52 32.5	144.14	0.32	0.0054641	32.1	19 58 13.40
22	143	61 50 38.0	50 10.7	144.07	− 0.43	0.0055405	+31.6	19 54 17.48
23	144	62 48 14.9	47 47.5	144.01	0.53	0.0056157	31.1	19 50 21.57
24	145	63 45 50.4	45 22.8	143.95	0.61	0.0056897	30.6	19 46 25.66
25	146	64 43 24.5	42 56.7	143.90	− 0.66	0.0057624	+30.1	19 42 29.75
26	147	65 40 57.4	40 29.4	143.85	0.68	0.0058341	29.6	19 38 33.84
27	148	66 38 29.1	38 0.9	143.80	0.65	0.0059048	29.2	19 34 37.93
28	149	67 35 59.7	35 31.4	143.75	− 0.61	0.0059742	+28.7	19 30 42.01
29	150	68 33 29.3	33 0.8	143.71	0.54	0.0060426	28.2	19 26 46.10
30	151	69 30 58.0	30 29.3	143.68	0.45	0.0061097	27.7	19 22 50.19
31	152	70 28 25.8	27 56.9	143.64	0.32	0.0061756	27.1	19 18 54.28
32	153	71 25 52.9	25 23.8	143.61	− 0.20	0.0062400	+26.5	19 14 58.36

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^d.0$.

Diff. for 1 Hour,
—$9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 47.6	15 40.0	57 51.3	−2.35	57 23.3	−2.30	16 17.3	2.35	18.3
2	15 32.6	15 25.5	56 56.0	2.23	56 29.9	2.11	17 11.3	2.15	19.3
3	15 18.8	15 12.7	56 5.4	1.96	55 42.8	1.80	18 0.5	1.95	20.3
4	15 7.1	15 2.1	55 22.3	−1.62	55 4.0	−1.43	18 45.4	1.80	21.3
5	14 57.8	14 54.1	54 48.1	1.22	54 34.7	1.02	19 27.2	1.69	22.3
6	14 51.1	14 48.8	54 23.7	0.81	54 15.2	0.61	20 6.9	1.63	23.3
7	14 47.1	14 46.1	54 9.0	−0.42	54 5.1	−0.23	20 45.8	1.62	24.3
8	14 45.6	14 45.7	54 3.4	−0.05	54 3.8	+0.11	21 25.0	1.65	25.3
9	14 46.3	14 47.4	54 6.1	+0.26	54 10.1	0.40	22 5.5	1.73	26.3
10	14 49.0	14 50.9	54 15.8	+0.53	54 22.9	+0.65	22 48.5	1.85	27.3
11	14 53.2	14 55.8	54 31.3	0.75	54 40.9	0.85	23 34.6	2.00	28.3
12	14 58.7	15 1.8	54 51.6	0.93	55 3.1	0.99	☌		29.3
13	15 5.2	15 8.7	55 15.4	+1.05	55 28.4	+1.11	0 24.4	2.15	0.7
14	15 12.5	15 16.3	55 42.1	1.16	55 56.3	1.20	1 17.5	2.27	1.7
15	15 20.3	15 24.5	56 11.0	1.25	56 26.2	1.29	2 13.0	2.34	2.7
16	15 28.8	15 33.1	56 41.9	+1.32	56 57.9	+1.35	3 9.2	2.33	3.7
17	15 37.6	15 42.2	57 14.4	1.39	57 31.2	1.41	4 4.5	2.26	4.7
18	15 46.8	15 51.5	57 48.3	1.43	58 5.5	1.43	4 57.7	2.17	5.7
19	15 56.2	16 0.9	58 22.7	+1.43	58 39.8	+1.41	5 48.5	2.08	6.7
20	16 5.4	16 9.8	58 56.5	1.36	59 12.5	1.29	6 37.6	2.02	7.7
21	16 13.9	16 17.6	59 27.5	1.20	59 41.2	1.07	7 25.9	2.01	8.7
22	16 20.8	16 23.5	59 53.2	+0.91	60 3.1	+0.72	8 14.7	2.07	9.7
23	16 25.5	16 26.8	60 10.5	+0.50	60 15.1	+0.25	9 5.5	2.17	10.7
24	16 27.2	16 26.7	60 16.6	−0.02	60 14.7	−0.30	9 59.4	2.32	11.7
25	16 25.2	16 22.9	60 9.4	−0.59	60 0.6	−0.87	10 57.1	2.48	12.7
26	16 19.6	16 15.4	59 48.5	1.14	59 33.3	1.38	11 58.1	2.59	13.7
27	16 10.5	16 5.0	59 15.3	1.60	58 54.9	1.78	13 0.5	2.59	14.7
28	15 58.9	15 52.4	58 32.5	−1.92	58 8.8	−2.01	14 1.6	2.48	15.7
29	15 45.7	15 38.9	57 44.2	2.06	57 19.3	2.07	14 59.0	2.29	16.7
30	15 32.2	15 25.6	56 54.5	2.04	56 30.4	1.96	15 51.4	2.08	17.7
31	15 19.4	15 13.5	56 7.4	1.86	55 45.8	1.73	16 39.0	1.89	18.7
32	15 8.1	15 3.3	55 26.0	−1.56	55 8.3	−1.39	17 22.7	1.75	19.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	18	19	15.43	2.5321	S.27	36	1.4	2.771
1	18	21	47.18	2.5263	27	33	10.1	2.939
2	18	24	18.58	2.5204	27	30	8.7	3.107
3	18	26	49.63	2.5144	27	26	57.2	3.273
4	18	29	20.31	2.5082	27	23	35.9	3.437
5	18	31	50.62	2.5020	27	20	4.8	3.599
6	18	34	20.55	2.4957	27	16	24.0	3.761
7	18	36	50.10	2.4893	27	12	33.5	3.922
8	18	39	19.26	2.4828	27	8	33.4	4.080
9	18	41	48.03	2.4763	27	4	23.9	4.237
10	18	44	16.41	2.4696	27	0	5.0	4.393
11	18	46	44.38	2.4628	26	55	36.7	4.549
12	18	49	11.94	2.4559	26	50	59.1	4.702
13	18	51	39.09	2.4490	26	46	12.4	4.854
14	18	54	5.82	2.4421	26	41	16.6	5.005
15	18	56	32.14	2.4351	26	36	11.8	5.154
16	18	58	58.03	2.4279	26	30	58.1	5.302
17	19	1	23.49	2.4207	26	25	35.6	5.448
18	19	3	48.52	2.4135	26	20	4.4	5.592
19	19	6	13.11	2.4063	26	14	24.6	5.735
20	19	8	37.27	2.3990	26	8	36.2	5.877
21	19	11	0.99	2.3916	26	2	39.3	6.018
22	19	13	24.26	2.3841	25	56	34.0	6.157
23	19	15	47.08	2.3767	S.25	50	20.5	6.293

SATURDAY 2.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
0	19	18	9.46	2.3692	S.25	43	58.8	6.429
1	19	20	31.39	2.3617	25	37	29.0	6.563
2	19	22	52.86	2.3541	25	30	51.2	6.697
3	19	25	13.88	2.3465	25	24	5.4	6.828
4	19	27	34.44	2.3389	25	17	11.8	6.957
5	19	29	54.55	2.3313	25	10	10.5	7.086
6	19	32	14.20	2.3237	25	3	1.5	7.213
7	19	34	33.39	2.3160	24	55	44.9	7.338
8	19	36	52.12	2.3083	24	48	20.9	7.462
9	19	39	10.39	2.3007	24	40	49.5	7.584
10	19	41	28.20	2.2930	24	33	10.8	7.705
11	19	43	45.55	2.2852	24	25	24.9	7.825
12	19	46	2.43	2.2775	24	17	31.8	7.943
13	19	48	18.85	2.2698	24	9	31.7	8.059
14	19	50	34.81	2.2622	24	1	24.7	8.174
15	19	52	50.31	2.2545	23	53	10.8	8.287
16	19	55	5.35	2.2467	23	44	50.2	8.399
17	19	57	19.92	2.2390	23	36	22.9	8.510
18	19	59	34.03	2.2313	23	27	49.0	8.619
19	20	1	47.68	2.2237	23	19	8.6	8.727
20	20	4	0.88	2.2162	23	10	21.8	8.833
21	20	6	13.62	2.2086	23	1	28.7	8.938
22	20	8	25.91	2.2010	22	52	29.3	9.041
23	20	10	37.74	2.1934	22	43	23.8	9.143
24	20	12	49.12	2.1858	S.22	34	12.2	9.243

SUNDAY 3.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	20	12	49.12	2.1858	S.22	34	12.2	9.243
1	20	15	0.04	2.1783	22	24	54.6	9.342
2	20	17	10.52	2.1709	22	15	31.1	9.440
3	20	19	20.55	2.1634	22	6	1.8	9.536
4	20	21	30.13	2.1560	21	56	26.8	9.631
5	20	23	39.27	2.1487	21	46	46.1	9.725
6	20	25	47.97	2.1413	21	36	59.8	9.817
7	20	27	56.23	2.1340	21	27	8.0	9.908
8	20	30	4.05	2.1267	21	17	10.8	9.998
9	20	32	11.44	2.1195	21	7	8.3	10.086
10	20	34	18.39	2.1123	20	57	0.5	10.172
11	20	36	24.92	2.1052	20	46	47.6	10.257
12	20	38	31.02	2.0981	20	36	29.6	10.342
13	20	40	36.69	2.0911	20	26	6.6	10.425
14	20	42	41.95	2.0842	20	15	38.6	10.507
15	20	44	46.79	2.0772	20	5	5.8	10.587
16	20	46	51.21	2.0704	19	54	28.2	10.667
17	20	48	55.23	2.0636	19	43	45.8	10.745
18	20	50	58.84	2.0568	19	32	58.8	10.821
19	20	53	2.04	2.0500	19	22	7.3	10.896
20	20	55	4.84	2.0433	19	11	11.3	10.971
21	20	57	7.24	2.0367	19	0	10.8	11.044
22	20	59	9.25	2.0302	18	49	6.0	11.116
23	21	1	10.87	2.0237	S.18	37	56.9	11.187

MONDAY 4.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
0	21	3	12.10	2.0173	S.18	26	43.6	11.256
1	21	5	12.95	2.0110	18	15	26.2	11.324
2	21	7	13.42	2.0047	18	4	4.7	11.392
3	21	9	13.51	1.9984	17	52	39.2	11.458
4	21	11	13.23	1.9923	17	41	9.8	11.523
5	21	13	12.59	1.9862	17	29	36.5	11.587
6	21	15	11.58	1.9802	17	17	59.4	11.649
7	21	17	10.21	1.9743	17	6	18.6	11.711
8	21	19	8.49	1.9684	16	54	34.1	11.772
9	21	21	6.42	1.9626	16	42	46.0	11.831
10	21	23	4.00	1.9568	16	30	54.4	11.889
11	21	25	1.24	1.9511	16	18	59.3	11.947
12	21	26	58.13	1.9454	16	7	0.8	12.003
13	21	28	54.69	1.9399	15	54	58.9	12.058
14	21	30	50.92	1.9345	15	42	53.8	12.112
15	21	32	46.83	1.9291	15	30	45.5	12.165
16	21	34	42.41	1.9238	15	18	34.0	12.218
17	21	36	37.68	1.9185	15	6	19.3	12.270
18	21	38	32.63	1.9133	14	54	1.6	12.320
19	21	40	27.27	1.9082	14	41	40.9	12.369
20	21	42	21.61	1.9032	14	29	17.3	12.417
21	21	44	15.65	1.8982	14	16	50.8	12.465
22	21	46	9.39	1.8934	14	4	21.5	12.512
23	21	48	2.85	1.8886	13	51	49.4	12.557
24	21	49	56.02	1.8838	S.13	39	14.6	12.602

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 49 56.02	1.8838	S. 13 39 14.6	12.602
1	21 51 48.90	1.8790	13 26 37.2	12.645
2	21 53 41.50	1.8745	13 13 57.2	12.688
3	21 55 33.84	1.8701	13 1 14.6	12.731
4	21 57 25.91	1.8656	12 48 29.5	12.772
5	21 59 17.71	1.8612	12 35 42.0	12.812
6	22 1 9.25	1.8568	12 22 52.1	12.851
7	22 3 0.53	1.8527	12 9 59.9	12.889
8	22 4 51.57	1.8486	11 57 5.4	12.927
9	22 6 42.36	1.8445	11 44 8.7	12.963
10	22 8 32.91	1.8406	11 31 9.8	12.999
11	22 10 23.23	1.8367	11 18 8.8	13.034
12	22 12 13.31	1.8328	11 5 5.7	13.069
13	22 14 3.16	1.8290	10 52 0.5	13.102
14	22 15 52.79	1.8254	10 38 53.4	13.134
15	22 17 42.21	1.8218	10 25 44.4	13.166
16	22 19 31.41	1.8182	10 12 33.5	13.197
17	22 21 20.40	1.8148	9 59 20.8	13.227
18	22 23 9.19	1.8115	9 46 6.2	13.257
19	22 24 57.78	1.8082	9 32 49.9	13.286
20	22 26 46.17	1.8049	9 19 31.9	13.313
21	22 28 34.37	1.8018	9 6 12.3	13.340
22	22 30 22.38	1.7988	8 52 51.1	13.367
23	22 32 10.22	1.7958	S. 8 39 28.3	13.393

WEDNESDAY 6.

Hour	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 33 57.88	1.7928	S. 8 26 3.9	13.418
1	22 35 45.36	1.7900	8 12 38.1	13.442
2	22 37 32.68	1.7873	7 59 10.9	13.465
3	22 39 19.84	1.7847	7 45 42.3	13.487
4	22 41 6.84	1.7821	7 32 12.4	13.509
5	22 42 53.69	1.7796	7 18 41.2	13.531
6	22 44 40.39	1.7771	7 5 8.7	13.552
7	22 46 26.94	1.7748	6 51 35.0	13.571
8	22 48 13.36	1.7725	6 38 0.2	13.589
9	22 49 59.64	1.7703	6 24 24.3	13.607
10	22 51 45.79	1.7682	6 10 47.3	13.625
11	22 53 31.82	1.7661	5 57 9.3	13.642
12	22 55 17.72	1.7641	5 43 30.2	13.659
13	22 57 3.51	1.7622	5 29 50.2	13.674
14	22 58 49.19	1.7603	5 16 9.3	13.688
15	23 0 34.75	1.7585	5 2 27.6	13.703
16	23 2 20.21	1.7569	4 48 45.0	13.717
17	23 4 5.58	1.7553	4 35 1.6	13.729
18	23 5 50.85	1.7538	4 21 17.5	13.741
19	23 7 36.03	1.7523	4 7 32.7	13.752
20	23 9 21.13	1.7510	3 53 47.2	13.763
21	23 11 6.15	1.7497	3 40 1.1	13.773
22	23 12 51.10	1.7485	3 26 14.4	13.782
23	23 14 35.97	1.7473	3 12 27.2	13.791
24	23 16 20.77	1.7462	S. 2 58 39.5	13.799

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 16 20.77	1.7460	S. 2 58 39.5	13.799
1	23 18 5.51	1.7452	2 44 51.3	13.807
2	23 19 50.20	1.7443	2 31 2.7	13.813
3	23 21 34.83	1.7434	2 17 13.7	13.819
4	23 23 19.41	1.7427	2 3 24.4	13.824
5	23 25 3.95	1.7420	1 49 34.8	13.829
6	23 26 48.45	1.7414	1 35 44.9	13.833
7	23 28 32.92	1.7408	1 21 54.8	13.836
8	23 30 17.35	1.7403	1 8 4.5	13.839
9	23 32 1.75	1.7399	0 54 14.1	13.842
10	23 33 46.13	1.7396	0 40 23.5	13.843
11	23 35 30.50	1.7393	0 26 32.9	13.843
12	23 37 14.85	1.7391	S. 0 12 42.3	13.843
13	23 38 59.19	1.7390	N. 0 1 8.3	13.843
14	23 40 43.53	1.7390	0 14 58.8	13.842
15	23 42 27.87	1.7391	0 28 49.3	13.840
16	23 44 12.22	1.7390	0 42 39.6	13.837
17	23 45 56.57	1.7393	0 56 29.7	13.833
18	23 47 40.93	1.7395	1 10 19.6	13.830
19	23 49 25.31	1.7399	1 24 9.3	13.825
20	23 51 9.72	1.7403	1 37 58.6	13.819
21	23 52 54.15	1.7408	1 51 47.6	13.813
22	23 54 38.61	1.7413	2 5 36.2	13.807
23	23 56 23.11	1.7420	N. 2 19 24.4	13.800

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 58 7.05	1.7427	N. 2 33 12.2	13.792
1	23 59 52.23	1.7434	2 46 59.4	13.783
2	0 1 36.86	1.7442	3 0 46.1	13.773
3	0 3 21.54	1.7451	3 14 32.2	13.763
4	0 5 6.27	1.7461	3 28 17.7	13.752
5	0 6 51.07	1.7472	3 42 2.5	13.741
6	0 8 35.93	1.7483	3 55 46.6	13.729
7	0 10 20.86	1.7495	4 9 30.0	13.716
8	0 12 5.87	1.7507	4 23 12.5	13.702
9	0 13 50.95	1.7521	4 36 54.2	13.688
10	0 15 36.12	1.7535	4 50 35.0	13.673
11	0 17 21.37	1.7549	5 4 14.9	13.658
12	0 19 6.71	1.7564	5 17 53.9	13.642
13	0 20 52.14	1.7581	5 31 31.9	13.624
14	0 22 37.68	1.7598	5 45 8.8	13.606
15	0 24 23.32	1.7615	5 58 44.6	13.587
16	0 26 9.06	1.7633	6 12 19.2	13.568
17	0 27 54.92	1.7652	6 25 52.7	13.548
18	0 29 40.89	1.7672	6 39 25.0	13.527
19	0 31 26.98	1.7692	6 52 56.0	13.506
20	0 33 13.20	1.7713	7 6 25.7	13.484
21	0 34 59.54	1.7734	7 19 54.1	13.460
22	0 36 46.01	1.7757	7 33 21.1	13.438
23	0 38 32.62	1.7780	7 46 46.6	13.413
24	0 40 19.37	1.7803	N. 8 0 10.6	13.388

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 40 19.37	1.7803	N. 8 0 10.6	13.388
1	0 42 6.26	1.7827	8 13 33.1	13.362
2	0 43 53.30	1.7853	8 26 54.0	13.334
3	0 45 40.50	1.7879	8 40 13.2	13.307
4	0 47 27.85	1.7905	8 53 30.8	13.279
5	0 49 15.36	1.7932	9 6 46.7	13.250
6	0 51 3.03	1.7959	9 20 0.8	13.220
7	0 52 50.87	1.7988	9 33 13.1	13.189
8	0 54 38.89	1.8017	9 46 23.5	13.158
9	0 56 27.08	1.8047	9 59 32.0	13.126
10	0 58 15.45	1.8077	10 12 38.6	13.092
11	1 0 4.00	1.8107	10 25 43.1	13.058
12	1 1 52.74	1.8139	10 38 45.6	13.024
13	1 3 41.67	1.8172	10 51 46.0	12.988
14	1 5 30.80	1.8204	11 4 44.2	12.952
15	1 7 20.12	1.8238	11 17 40.2	12.914
16	1 9 9.65	1.8272	11 30 33.9	12.876
17	1 10 59.39	1.8307	11 43 25.3	12.837
18	1 12 49.33	1.8342	11 56 14.3	12.797
19	1 14 39.49	1.8378	12 9 0.9	12.757
20	1 16 29.87	1.8414	12 21 45.1	12.715
21	1 18 20.46	1.8451	12 34 26.7	12.672
22	1 20 11.28	1.8489	12 47 5.7	12.628
23	1 22 2.33	1.8528	N.12 59 42.1	12.585

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 23 53.61	1.8567	N.13 12 15.9	12.541
1	1 25 45.13	1.8607	13 24 47.0	12.494
2	1 27 36.89	1.8646	13 37 15.2	12.447
3	1 29 28.88	1.8686	13 49 40.6	12.399
4	1 31 21.12	1.8728	14 2 3.1	12.350
5	1 33 13.61	1.8770	14 14 22.6	12.300
6	1 35 6.36	1.8812	14 26 39.1	12.249
7	1 36 59.36	1.8855	14 38 52.5	12.198
8	1 38 52.62	1.8899	14 51 2.8	12.146
9	1 40 46.15	1.8943	15 3 10.0	12.092
10	1 42 39.94	1.8987	15 15 13.9	12.037
11	1 44 34.00	1.9032	15 27 14.5	11.982
12	1 46 28.33	1.9078	15 39 11.8	11.927
13	1 48 22.94	1.9125	15 51 5.7	11.869
14	1 50 17.83	1.9171	16 2 56.1	11.810
15	1 52 12.99	1.9218	16 14 42.9	11.750
16	1 54 8.44	1.9266	16 26 26.1	11.690
17	1 56 4.18	1.9313	16 38 5.7	11.630
18	1 58 0.20	1.9361	16 49 41.7	11.568
19	1 59 56.51	1.9411	17 1 13.9	11.504
20	2 1 53.13	1.9462	17 12 42.2	11.439
21	2 3 50.05	1.9512	17 24 6.6	11.373
22	2 5 47.27	1.9562	17 35 27.0	11.307
23	2 7 44.79	1.9612	17 46 43.5	11.241
24	2 9 42.61	1.9663	N.17 57 55.9	11.172

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 9 42.61	1.9663	N.17 57 55.9	11.172
1	2 11 40.74	1.9715	18 9 4.1	11.102
2	2 13 39.19	1.9767	18 20 8.1	11.032
3	2 15 37.95	1.9819	18 31 7.9	10.961
4	2 17 37.02	1.9872	18 42 3.4	10.887
5	2 19 36.41	1.9925	18 52 54.4	10.812
6	2 21 36.12	1.9978	19 3 40.9	10.737
7	2 23 36.15	2.0032	19 14 22.9	10.662
8	2 25 36.51	2.0087	19 25 0.4	10.586
9	2 27 37.19	2.0141	19 35 33.2	10.507
10	2 29 38.20	2.0196	19 46 1.2	10.427
11	2 31 39.54	2.0251	19 56 24.5	10.347
12	2 33 41.21	2.0307	20 6 42.9	10.266
13	2 35 43.22	2.0362	20 16 56.4	10.183
14	2 37 45.56	2.0417	20 27 4.9	10.100
15	2 39 48.23	2.0473	20 37 8.4	10.016
16	2 41 51.24	2.0530	20 47 6.8	9.929
17	2 43 54.59	2.0587	20 56 59.9	9.842
18	2 45 58.28	2.0643	21 6 47.8	9.754
19	2 48 2.31	2.0700	21 16 30.4	9.665
20	2 50 6.68	2.0757	21 26 7.6	9.574
21	2 52 11.40	2.0815	21 35 39.3	9.482
22	2 54 16.46	2.0873	21 45 5.5	9.390
23	2 56 21.87	2.0931	N.21 54 26.1	9.296

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 58 27.63	2.0988	N.22 3 41.0	9.201
1	3 0 33.73	2.1046	22 12 50.2	9.105
2	3 2 40.18	2.1103	22 21 53.6	9.008
3	3 4 46.97	2.1161	22 30 51.2	8.910
4	3 6 54.11	2.1218	22 39 42.8	8.810
5	3 9 1.59	2.1276	22 48 28.4	8.709
6	3 11 9.42	2.1334	22 57 7.9	8.607
7	3 13 17.60	2.1392	23 5 41.3	8.505
8	3 15 26.12	2.1449	23 14 8.5	8.401
9	3 17 34.99	2.1507	23 22 29.4	8.295
10	3 19 44.21	2.1565	23 30 43.9	8.189
11	3 21 53.77	2.1622	23 38 52.0	8.082
12	3 24 3.68	2.1680	23 46 53.7	7.973
13	3 26 13.93	2.1737	23 54 48.8	7.863
14	3 28 24.52	2.1794	24 2 37.3	7.752
15	3 30 35.46	2.1851	24 10 19.1	7.641
16	3 32 46.74	2.1908	24 17 54.2	7.528
17	3 34 58.36	2.1964	24 25 22.4	7.413
18	3 37 10.31	2.2020	24 32 43.7	7.298
19	3 39 22.60	2.2077	24 39 58.1	7.18
20	3 41 35.23	2.2133	24 47 5.5	7.06
21	3 43 48.19	2.2188	24 54 5.7	6.94
22	3 46 1.49	2.2243	25 0 58.8	6.8
23	3 48 15.11	2.2297	25 7 44.7	6.70
24	3 50 29.06	2.2352	N.25 14 23.3	6.58

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension	Diff. for 1 Minute	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 13.					FRIDAY 15.			
h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
3 50 29.06	2.2352	N.25 14 23.3	6.582	0	5 42 50.60	2.4135	N.27 51 53.4	0.311
3 52 43.33	2.2406	25 20 54.5	6.459	1	5 45 15.45	2.4148	27 51 30.0	0.469
3 54 57.93	2.2460	25 27 18.4	6.336	2	5 47 40.38	2.4161	27 50 57.1	0.627
3 57 12.85	2.2513	25 33 34.8	6.210	3	5 50 5.38	2.4172	27 50 14.7	0.786
3 59 28.09	2.2566	25 39 43.6	6.084	4	5 52 30.44	2.4182	27 49 22.8	0.945
4 1 43.64	2.2618	25 45 44.8	5.957	5	5 54 55.56	2.4191	27 48 21.3	1.104
4 3 59.50	2.2669	25 51 38.4	5.828	6	5 57 20.73	2.4198	27 47 10.3	1.263
4 6 15.67	2.2721	25 57 24.2	5.698	7	5 59 45.94	2.4204	27 45 49.7	1.422
4 8 32.15	2.2772	26 3 2.2	5.568	8	6 2 11.18	2.4209	27 44 19.6	1.582
4 10 48.93	2.2822	26 8 32.4	5.437	9	6 4 36.45	2.4213	27 42 39.9	1.742
4 13 6.01	2.2871	26 13 54.7	5.305	10	6 7 1.74	2.4217	27 40 50.6	1.902
4 15 23.38	2.2919	26 19 9.0	5.172	11	6 9 27.05	2.4219	27 38 51.7	2.061
4 17 41.04	2.2967	26 24 15.3	5.037	12	6 11 52.37	2.4220	27 36 43.3	2.220
4 19 58.99	2.3015	26 29 13.5	4.902	13	6 14 17.69	2.4219	27 34 25.3	2.380
4 22 17.22	2.3062	26 34 3.6	4.766	14	6 16 43.00	2.4217	27 31 57.7	2.539
4 24 35.74	2.3109	26 38 45.4	4.629	15	6 19 8.30	2.4215	27 29 20.6	2.698
4 26 54.53	2.3154	26 43 19.0	4.491	16	6 21 33.58	2.4211	27 26 33.9	2.857
4 29 13.59	2.3199	26 47 44.3	4.352	17	6 23 58.83	2.4207	27 23 37.7	3.017
4 31 32.92	2.3243	26 52 1.2	4.212	18	6 26 24.06	2.4202	27 20 31.9	3.176
4 33 52.51	2.3287	26 56 9.7	4.071	19	6 28 49.25	2.4194	27 17 16.6	3.335
4 36 12.36	2.3329	27 0 9.7	3.929	20	6 31 14.39	2.4186	27 13 51.7	3.494
4 38 32.46	2.3371	27 4 1.2	3.787	21	6 33 39.48	2.4177	27 10 17.3	3.652
4 40 52.81	2.3412	27 7 44.2	3.644	22	6 36 4.51	2.4167	27 6 33.4	3.810
4 43 13.40	2.3452	N.27 11 18.5	3.499	23	6 38 29.48	2.4156	N.27 2 40.1	3.967
THURSDAY 14.					SATURDAY 16.			
4 45 34.24	2.3492	N.27 14 44.1	3.354	0	6 40 54.38	2.4143	N.26 58 37.3	4.125
4 47 55.31	2.3530	27 18 1.0	3.209	1	6 43 19.20	2.4130	26 54 25.1	4.282
4 50 16.60	2.3567	27 21 9.2	3.063	2	6 45 43.94	2.4117	26 50 3.4	4.440
4 52 38.11	2.3603	27 24 8.6	2.916	3	6 48 8.60	2.4102	26 45 32.3	4.597
4 54 59.84	2.3639	27 26 59.1	2.768	4	6 50 33.16	2.4085	26 40 51.8	4.753
4 57 21.78	2.3674	27 29 40.7	2.619	5	6 52 57.62	2.4068	26 36 2.0	4.908
4 59 43.93	2.3708	27 32 13.4	2.470	6	6 55 21.98	2.4050	26 31 2.8	5.064
5 2 6.28	2.3741	27 34 37.1	2.320	7	6 57 46.22	2.4031	26 25 54.3	5.219
5 4 28.82	2.3772	27 36 51.8	2.169	8	7 0 10.35	2.4012	26 20 36.5	5.373
5 6 51.54	2.3802	27 38 57.4	2.017	9	7 2 34.36	2.3991	26 15 9.5	5.527
5 9 14.44	2.3832	27 40 53.9	1.866	10	7 4 58.24	2.3969	26 9 33.3	5.680
5 11 37.52	2.3861	27 42 41.3	1.714	11	7 7 21.99	2.3947	26 3 47.9	5.833
5 14 0.77	2.3888	27 44 19.6	1.561	12	7 9 45.61	2.3925	25 57 53.3	5.986
5 16 24.18	2.3915	27 45 48.7	1.407	13	7 12 9.09	2.3901	25 51 49.6	6.137
5 18 47.75	2.3941	27 47 8.5	1.253	14	7 14 32.42	2.3876	25 45 36.8	6.288
5 21 11.47	2.3965	27 48 19.1	1.099	15	7 16 55.60	2.3850	25 39 15.0	6.438
5 23 35.33	2.3988	27 49 20.4	0.944	16	7 19 18.62	2.3824	25 32 44.2	6.588
5 25 59.33	2.4011	27 50 12.4	0.788	17	7 21 41.48	2.3798	25 26 4.4	6.738
5 28 23.46	2.4032	27 50 55.0	0.633	18	7 24 4.19	2.3771	25 19 15.6	6.887
5 30 47.72	2.4052	27 51 28.3	0.477	19	7 26 26.73	2.3742	25 12 17.9	7.035
5 33 12.09	2.4071	27 51 52.2	0.320	20	7 28 49.09	2.3713	25 5 11.4	7.182
5 35 36.57	2.4088	27 52 6.7	0.162	21	7 31 11.28	2.3683	24 57 56.1	7.328
5 38 1.15	2.4105	27 52 11.7	+0.005	22	7 33 33.29	2.3653	24 50 32.0	7.474
5 40 25.83	2.4121	27 52 7.3	−0.153	23	7 35 55.12	2.3623	24 42 59.2	7.618
5 42 50.60	2.4135	N.27 51 53.4	0.311	24	7 38 16.77	2.3592	N.24 35 17.8	7.762

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 38 16.77	2.3592	N.24 35 17.8	7.762
1	7 40 38.23	2.3560	24 27 27.7	7.906
2	7 42 59.49	2.3528	24 19 29.0	8.049
3	7 45 20.56	2.3495	24 11 21.8	8.191
4	7 47 41.43	2.3462	24 3 6.1	8.332
5	7 50 2.10	2.3428	23 54 42.0	8.472
6	7 52 22.57	2.3394	23 46 9.5	8.611
7	7 54 42.83	2.3360	23 37 28.7	8.749
8	7 57 2.89	2.3326	23 28 39.6	8.887
9	7 59 22.74	2.3291	23 19 42.3	9.023
10	8 1 42.38	2.3255	23 10 36.8	9.159
11	8 4 1.80	2.3218	23 1 23.2	9.293
12	8 6 21.00	2.3182	22 52 1.6	9.427
13	8 8 39.98	2.3146	22 42 32.0	9.560
14	8 10 58.75	2.3110	22 32 54.4	9.692
15	8 13 17.30	2.3073	22 23 8.9	9.823
16	8 15 35.63	2.3037	22 13 15.6	9.952
17	8 17 53.74	2.2999	22 3 14.6	10.081
18	8 20 11.62	2.2962	21 53 5.9	10.209
19	8 22 29.28	2.2925	21 42 49.5	10.337
20	8 24 46.72	2.2887	21 32 25.5	10.462
21	8 27 3.93	2.2849	21 21 54.1	10.586
22	8 29 20.91	2.2812	21 11 15.2	10.710
23	8 31 37.67	2.2774	N.21 0 28.9	10.833

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 33 54.20	2.2736	N.20 49 35.2	10.955
1	8 36 10.50	2.2698	20 38 34.3	11.075
2	8 38 26.58	2.2662	20 27 26.2	11.195
3	8 40 42.44	2.2624	20 16 10.9	11.313
4	8 42 58.07	2.2587	20 4 48.6	11.430
5	8 45 13.48	2.2549	19 53 19.3	11.546
6	8 47 28.66	2.2512	19 41 43.1	11.661
7	8 49 43.62	2.2475	19 30 0.0	11.775
8	8 51 58.36	2.2437	19 18 10.1	11.888
9	8 54 12.87	2.2400	19 6 13.4	12.000
10	8 56 27.16	2.2364	18 54 10.1	12.110
11	8 58 41.24	2.2329	18 42 0.2	12.219
12	9 0 55.11	2.2293	18 29 43.8	12.327
13	9 3 8.76	2.2257	18 17 21.0	12.434
14	9 5 22.19	2.2220	18 4 51.7	12.541
15	9 7 35.40	2.2184	17 52 16.1	12.645
16	9 9 48.40	2.2150	17 39 34.3	12.748
17	9 12 1.20	2.2116	17 26 46.3	12.851
18	9 14 13.79	2.2082	17 13 52.1	12.953
19	9 16 26.18	2.2047	17 0 51.9	13.053
20	9 18 38.36	2.2013	16 47 45.7	13.151
21	9 20 50.34	2.1980	16 34 33.7	13.248
22	9 23 2.12	2.1947	16 21 15.9	13.345
23	9 25 13.71	2.1915	16 7 52.3	13.441
24	9 27 25.10	2.1883	N.15 54 23.0	13.535

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 27 25.10	2.1883	N.15 54 23.0	13.535
1	9 29 36.30	2.1851	15 40 48.1	13.627
2	9 31 47.31	2.1820	15 27 7.7	13.719
3	9 33 58.14	2.1790	15 13 21.8	13.809
4	9 36 8.79	2.1760	14 59 30.6	13.898
5	9 38 19.26	2.1730	14 45 34.0	13.987
6	9 40 29.55	2.1701	14 31 32.2	14.073
7	9 42 39.67	2.1672	14 17 25.3	14.158
8	9 44 49.62	2.1644	14 3 13.2	14.243
9	9 46 59.40	2.1617	13 48 56.1	14.326
10	9 49 9.02	2.1590	13 34 34.1	14.407
11	9 51 18.48	2.1563	13 20 7.2	14.487
12	9 53 27.78	2.1537	13 5 35.6	14.567
13	9 55 36.93	2.1512	12 50 59.2	14.645
14	9 57 45.93	2.1488	12 36 18.2	14.721
15	9 59 54.79	2.1464	12 21 32.7	14.796
16	10 2 3.50	2.1441	12 6 42.7	14.871
17	10 4 12.08	2.1419	11 51 48.2	14.944
18	10 6 20.53	2.1397	11 36 49.4	15.016
19	10 8 28.85	2.1376	11 21 46.3	15.086
20	10 10 37.04	2.1355	11 6 39.1	15.154
21	10 12 45.11	2.1335	10 51 27.8	15.222
22	10 14 53.06	2.1316	10 36 12.4	15.289
23	10 17 0.90	2.1297	N.10 20 53.1	15.353

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 19 8.63	2.1280	N.10 5 30.0	15.417
1	10 21 16.26	2.1263	9 50 3.1	15.480
2	10 23 23.79	2.1247	9 34 32.4	15.542
3	10 25 31.22	2.1231	9 18 58.1	15.602
4	10 27 38.56	2.1216	9 3 20.2	15.660
5	10 29 45.82	2.1202	8 47 38.9	15.717
6	10 31 52.99	2.1189	8 31 54.2	15.772
7	10 34 0.08	2.1177	8 16 6.2	15.827
8	10 36 7.11	2.1166	8 0 14.9	15.881
9	10 38 14.07	2.1154	7 44 20.5	15.932
10	10 40 20.96	2.1144	7 28 23.1	15.982
11	10 42 27.79	2.1135	7 12 22.6	16.032
12	10 44 34.58	2.1127	6 56 19.2	16.080
13	10 46 41.32	2.1119	6 40 13.0	16.126
14	10 48 48.01	2.1112	6 24 4.1	16.171
15	10 50 54.66	2.1105	6 7 52.5	16.214
16	10 53 1.27	2.1100	5 51 38.4	16.257
17	10 55 7.86	2.1097	5 35 21.7	16.298
18	10 57 14.43	2.1093	5 19 2.6	16.338
19	10 59 20.98	2.1090	5 2 41.2	16.376
20	11 1 27.51	2.1088	4 46 17.5	16.412
21	11 3 34.04	2.1087	4 29 51.7	16.44
22	11 5 40.56	2.1087	4 13 23.9	16.4
23	11 7 47.08	2.1087	3 56 54.0	16.5
24	11 9 53.61	2.1089	N. 3 40 22.2	16.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 21.					**SATURDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	11 9 53.61	2.1089	N. 3 40 22.2	16.545	0	12 52 59.16	2.2202	S. 9 40 28.2	16.196
1	11 12 0.15	2.1092	3 23 48.6	16.574	1	12 55 12.50	2.2246	9 56 38.5	16.148
2	11 14 6.71	2.1095	3 7 13.3	16.602	2	12 57 26.11	2.2291	10 12 45.9	16.098
3	11 16 13.29	2.1099	2 50 36.3	16.630	3	12 59 39.99	2.2336	10 28 50.2	16.044
4	11 18 19.90	2.1105	2 33 57.7	16.655	4	13 1 54.14	2.2382	10 44 51.2	15.989
5	11 20 26.55	2.1111	2 17 17.7	16.678	5	13 4 8.57	2.2428	11 0 48.9	15.933
6	11 22 33.23	2.1117	2 0 36.3	16.701	6	13 6 23.28	2.2476	11 16 43.2	15.875
7	11 24 39.95	2.1125	1 43 53.6	16.722	7	13 8 38.28	2.2524	11 32 33.9	15.815
8	11 26 46.73	2.1134	1 27 9.7	16.741	8	13 10 53.57	2.2573	11 48 21.0	15.753
9	11 28 53.56	2.1143	1 10 24.7	16.758	9	13 13 9.16	2.2622	12 4 4.3	15.689
10	11 31 0.45	2.1153	0 53 38.7	16.774	10	13 15 25.04	2.2672	12 19 43.7	15.623
11	11 33 7.40	2.1164	0 36 51.8	16.789	11	13 17 41.23	2.2723	12 35 19.1	15.555
12	11 35 14.42	2.1177	0 20 4.0	16.802	12	13 19 57.72	2.2774	12 50 50.3	15.485
13	11 37 21.52	2.1190	N. 0 3 15.5	16.814	13	13 22 14.52	2.2826	13 6 17.3	15.414
14	11 39 28.70	2.1204	S. 0 13 33.7	16.824	14	13 24 31.64	2.2879	13 21 40.0	15.341
15	11 41 35.97	2.1219	0 30 23.4	16.832	15	13 26 49.07	2.2933	13 36 58.2	15.265
16	11 43 43.33	2.1234	0 47 13.6	16.840	16	13 29 6.83	2.2987	13 52 11.8	15.187
17	11 45 50.78	2.1251	1 4 4.2	16.846	17	13 31 24.91	2.3040	14 7 20.7	15.107
18	11 47 58.34	2.1269	1 20 55.1	16.849	18	13 33 43.31	2.3094	14 22 24.7	15.026
19	11 50 6.01	2.1287	1 37 46.1	16.852	19	13 36 2.04	2.3150	14 37 23.8	14.943
20	11 52 13.79	2.1307	1 54 37.3	16.853	20	13 38 21.11	2.3206	14 52 17.9	14.858
21	11 54 21.69	2.1327	2 11 28.5	16.852	21	13 40 40.51	2.3262	15 7 6.8	14.771
22	11 56 29.71	2.1348	2 28 19.6	16.850	22	13 43 0.25	2.3318	15 21 50.4	14.682
23	11 58 37.86	2.1370	S. 2 45 10.5	16.846	23	13 45 20.33	2.3375	S. 15 36 28.6	14.591
	FRIDAY 22.					**SUNDAY 24.**			
0	12 0 46.15	2.1393	S. 3 2 1.1	16.840	0	13 47 40.75	2.3433	S. 15 51 1.3	14.498
1	12 2 54.58	2.1417	3 18 51.3	16.832	1	13 50 1.52	2.3491	16 5 28.4	14.403
2	12 5 3.16	2.1442	3 35 41.0	16.824	2	13 52 22.64	2.3548	16 19 49.7	14.306
3	12 7 11.88	2.1467	3 52 30.2	16.814	3	13 54 44.10	2.3606	16 34 5.1	14.208
4	12 9 20.76	2.1493	4 9 18.7	16.802	4	13 57 5.91	2.3665	16 48 14.6	14.107
5	12 11 29.80	2.1521	4 26 6.4	16.787	5	13 59 28.08	2.3724	17 2 17.9	14.003
6	12 13 39.01	2.1550	4 42 53.2	16.772	6	14 1 50.60	2.3783	17 16 15.0	13.899
7	12 15 48.40	2.1579	4 59 39.0	16.755	7	14 4 13.48	2.3842	17 30 5.8	13.792
8	12 17 57.96	2.1608	5 16 23.8	16.737	8	14 6 36.71	2.3902	17 43 50.1	13.684
9	12 20 7.70	2.1639	5 33 7.4	16.716	9	14 9 0.30	2.3962	17 57 27.9	13.574
10	12 22 17.63	2.1671	5 49 49.7	16.693	10	14 11 24.25	2.4022	18 10 59.0	13.461
11	12 24 27.75	2.1703	6 6 30.6	16.669	11	14 13 48.56	2.4082	18 24 23.2	13.346
12	12 26 38.07	2.1737	6 23 10.0	16.644	12	14 16 13.23	2.4142	18 37 40.5	13.230
13	12 28 48.59	2.1771	6 39 47.9	16.617	13	14 18 38.26	2.4202	18 50 50.8	13.112
14	12 30 59.32	2.1807	6 56 24.0	16.587	14	14 21 3.65	2.4262	19 3 53.9	12.992
15	12 33 10.27	2.1843	7 12 58.3	16.556	15	14 23 29.40	2.4322	19 16 49.8	12.870
16	12 35 21.43	2.1879	7 29 30.7	16.523	16	14 25 55.52	2.4382	19 29 38.3	12.746
17	12 37 32.81	2.1917	7 46 1.1	16.488	17	14 28 21.99	2.4442	19 42 19.3	12.620
18	12 39 44.43	2.1956	8 2 29.3	16.452	18	14 30 48.82	2.4502	19 54 52.7	12.492
19	12 41 56.28	2.1994	8 18 55.3	16.414	19	14 33 16.01	2.4562	20 7 18.4	12.362
20	12 44 8.36	2.2033	8 35 19.0	16.375	20	14 35 43.56	2.4621	20 19 36.2	12.231
21	12 46 20.68	2.2074	8 51 40.3	16.333	21	14 38 11.46	2.4680	20 31 46.1	12.098
22	12 48 33.25	2.2116	9 7 59.0	16.289	22	14 40 39.72	2.4739	20 43 47.9	11.963
23	12 50 46.08	2.2159	9 24 15.0	16.243	23	14 43 8.33	2.4798	20 55 41.6	11.826
24	12 52 59.16	2.2202	S. 9 40 28.2	16.196	24	14 45 37.30	2.4857	S. 21 7 27.0	11.688

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 25.					WEDNESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 45 37.30	2.4857	S.21 7 27.0	11.688	0	16 50 13.93	2.6610	S.27 19 51.4	3.396
1	14 48 6.62	2.4915	21 19 4.1	11.547	1	16 52 53.60	2.6612	27 23 9.4	3.203
2	14 50 36.28	2.4973	21 30 32.6	11.403	2	16 55 33.27	2.6612	27 26 15.8	3.010
3	14 53 6.29	2.5031	21 41 52.5	11.259	3	16 58 12.94	2.6611	27 29 10.6	2.817
4	14 55 36.65	2.5088	21 53 3.7	11.114	4	17 0 52.60	2.6607	27 31 53.9	2.625
5	14 58 7.34	2.5143	22 4 6.2	10.967	5	17 3 32.22	2.6600	27 34 25.6	2.432
6	15 0 38.37	2.5200	22 14 59.8	10.819	6	17 6 11.80	2.6592	27 36 45.7	2.238
7	15 3 9.74	2.5255	22 25 44.3	10.667	7	17 8 51.33	2.6584	27 38 54.2	2.046
8	15 5 41.43	2.5309	22 36 19.8	10.515	8	17 11 30.81	2.6574	27 40 51.2	1.854
9	15 8 13.45	2.5364	22 46 46.1	10.360	9	17 14 10.22	2.6562	27 42 36.7	1.662
10	15 10 45.80	2.5418	22 57 3.0	10.204	10	17 16 49.55	2.6547	27 44 10.7	1.470
11	15 13 18.46	2.5470	23 7 10.6	10.047	11	17 19 28.78	2.6530	27 45 33.1	1.278
12	15 15 51.44	2.5522	23 17 8.7	9.888	12	17 22 7.91	2.6512	27 46 44.0	1.086
13	15 18 24.73	2.5573	23 26 57.2	9.727	13	17 24 46.93	2.6492	27 47 43.4	0.895
14	15 20 58.32	2.5623	23 36 36.0	9.565	14	17 27 25.82	2.6471	27 48 31.4	0.705
15	15 23 32.21	2.5673	23 46 5.0	9.402	15	17 30 4.58	2.6448	27 49 8.0	0.515
16	15 26 6.40	2.5722	23 55 24.2	9.237	16	17 32 43.19	2.6423	27 49 33.2	0.325
17	15 28 40.88	2.5770	24 4 33.5	9.071	17	17 35 21.65	2.6397	27 49 47.0	−0.136
18	15 31 15.64	2.5817	24 13 32.7	8.902	18	17 37 59.95	2.6368	27 49 49.5	+0.053
19	15 33 50.68	2.5862	24 22 21.8	8.733	19	17 40 38.07	2.6337	27 49 40.7	0.241
20	15 36 25.99	2.5907	24 31 0.7	8.563	20	17 43 16.00	2.6305	27 49 20.6	0.428
21	15 39 1.57	2.5952	24 39 29.4	8.392	21	17 45 53.73	2.6272	27 48 49.3	0.614
22	15 41 37.41	2.5994	24 47 47.7	8.218	22	17 48 31.26	2.6237	27 48 6.9	0.800
23	15 44 13.50	2.6035	S.24 55 55.6	8.044	23	17 51 8.57	2.6199	S.27 47 13.3	0.986
	TUESDAY 26.					THURSDAY 28.			
0	15 46 49.83	2.6075	S.25 3 53.0	7.868	0	17 53 45.65	2.6161	S.27 46 8.6	1.170
1	15 49 26.40	2.6114	25 11 39.8	7.692	1	17 56 22.50	2.6121	27 44 52.9	1.353
2	15 52 3.20	2.6152	25 19 16.0	7.514	2	17 58 59.10	2.6079	27 43 26.2	1.535
3	15 54 40.23	2.6189	25 26 41.5	7.336	3	18 1 35.45	2.6036	27 41 48.7	1.716
4	15 57 17.47	2.6224	25 33 56.3	7.156	4	18 4 11.53	2.5991	27 40 0.3	1.897
5	15 59 54.92	2.6258	25 41 0.2	6.974	5	18 6 47.34	2.5945	27 38 1.1	2.077
6	16 2 32.57	2.6291	25 47 53.2	6.792	6	18 9 22.87	2.5897	27 35 51.1	2.256
7	16 5 10.41	2.6322	25 54 35.3	6.610	7	18 11 58.11	2.5848	27 33 30.4	2.432
8	16 7 48.43	2.6351	26 1 6.4	6.426	8	18 14 33.05	2.5797	27 30 59.2	2.608
9	16 10 26.62	2.6379	26 7 26.4	6.241	9	18 17 7.68	2.5745	27 28 17.4	2.784
10	16 13 4.98	2.6406	26 13 35.3	6.055	10	18 19 41.99	2.5692	27 25 25.1	2.958
11	16 15 43.49	2.6430	26 19 33.0	5.869	11	18 22 15.98	2.5637	27 22 22.4	3.131
12	16 18 22.14	2.6453	26 25 19.6	5.682	12	18 24 49.64	2.5582	27 19 9.4	3.302
13	16 21 0.93	2.6476	26 30 54.9	5.494	13	18 27 22.96	2.5524	27 15 46.1	3.473
14	16 23 39.85	2.6497	26 36 18.9	5.306	14	18 29 55.93	2.5465	27 12 12.6	3.642
15	16 26 18.89	2.6516	26 41 31.6	5.117	15	18 32 28.54	2.5406	27 8 29.1	3.809
16	16 28 58.04	2.6533	26 46 32.9	4.927	16	18 35 0.80	2.5346	27 4 35.5	3.976
17	16 31 37.29	2.6549	26 51 22.8	4.737	17	18 37 32.69	2.5283	27 0 31.9	4.142
18	16 34 16.63	2.6563	26 56 1.4	4.547	18	18 40 4.20	2.5220	26 56 18.5	4.305
19	16 36 56.05	2.6575	27 0 28.5	4.356	19	18 42 35.33	2.5157	26 51 55.3	4.468
20	16 39 35.53	2.6585	27 4 44.1	4.164	20	18 45 6.08	2.5092	26 47 22.3	4.629
21	16 42 15.07	2.6594	27 8 48.2	3.973	21	18 47 36.43	2.5025	26 42 39.8	4.788
22	16 44 54.66	2.6601	27 12 40.8	3.781	22	18 50 6.38	2.4958	26 37 47.8	4.946
23	16 47 34.28	2.6606	27 16 21.9	3.588	23	18 52 35.93	2.4891	26 32 46.3	5.103
24	16 50 13.93	2.6610	S.27 19 51.4	3.396	24	18 55 5.07	2.4822	S.26 27 35.4	5.259

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Right cension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
m s	s	° ′ ″	″
55 5.07	2.4822	S.26 27 35.4	5.259
57 33.79	2.4752	26 22 15.2	5.412
0 2.09	2.4682	26 16 45.9	5.564
2 29.97	2.4611	26 11 7.5	5.715
4 57.42	2.4538	26 5 20.1	5.865
7 24.43	2.4466	25 59 23.7	6.013
9 51.01	2.4393	25 53 18.5	6.159
12 17.15	2.4319	25 47 4.6	6.303
14 42.84	2.4244	25 40 42.1	6.447
17 8.08	2.4169	25 34 11.0	6.588
19 32.87	2.4093	25 27 31.5	6.728
21 57.20	2.4017	25 20 43.6	6.867
24 21.08	2.3941	25 13 47.5	7.003
26 44.50	2.3864	25 6 43.2	7.138
29 7.45	2.3787	24 59 30.9	7.272
31 29.94	2.3709	24 52 10.6	7.404
33 51.96	2.3631	24 44 42.4	7.535
36 13.51	2.3553	24 37 6.4	7.663
38 34.60	2.3476	24 29 22.8	7.790
40 55.22	2.3397	24 21 31.6	7.916
43 15.36	2.3317	24 13 32.9	8.041
45 35.02	2.3238	24 5 26.7	8.163
47 54.21	2.3159	23 57 13.3	8.283
50 12.93	2.3080	S.23 48 52.7	8.402

SATURDAY 30.

Right cension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
52 31.17	2.3001	S.23 40 25.0	8.520
54 48.94	2.2922	23 31 50.3	8.636
57 6.23	2.2842	23 23 8.7	8.750
59 23.04	2.2762	23 14 20.3	8.862
1 39.37	2.2683	23 5 25.2	8.974
3 55.23	2.2604	22 56 23.4	9.084
6 10.62	2.2525	22 47 15.1	9.192
8 25.53	2.2446	22 38 0.4	9.298
10 39.97	2.2367	22 28 39.3	9.403
12 53.94	2.2289	22 19 12.0	9.507
15 7.44	2.2211	22 9 38.5	9.609
17 20.47	2.2132	21 59 58.9	9.709
19 33.03	2.2054	21 50 13.4	9.807
21 45.12	2.1977	21 40 22.0	9.905
23 56.75	2.1900	21 30 24.8	10.001
26 7.92	2.1822	21 20 21.9	10.095
28 18.62	2.1745	21 10 13.4	10.188
30 28.86	2.1669	20 59 59.3	10.280
32 38.65	2.1593	20 49 39.8	10.369
34 47.98	2.1517	20 39 15.0	10.458
36 56.86	2.1442	20 28 44.9	10.545
39 5.29	2.1368	20 18 9.6	10.630
41 13.28	2.1294	20 7 29.3	10.714
43 20.82	2.1220	19 56 44.0	10.797
45 27.92	2.1147	S.19 45 53.7	10.878

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 45 27.92	2.1147	S.19 45 53.7	10.878
1	20 47 34.58	2.1074	19 34 58.6	10.957
2	20 49 40.81	2.1002	19 23 58.8	11.036
3	20 51 46.60	2.0929	19 12 54.3	11.113
4	20 53 51.96	2.0858	19 1 45.2	11.189
5	20 55 56.90	2.0788	18 50 31.6	11.263
6	20 58 1.42	2.0718	18 39 13.6	11.337
7	21 0 5.52	2.0648	18 27 51.2	11.408
8	21 2 9.20	2.0579	18 16 24.6	11.478
9	21 4 12.47	2.0511	18 4 53.8	11.547
10	21 6 15.33	2.0443	17 53 18.9	11.616
11	21 8 17.79	2.0376	17 41 39.9	11.682
12	21 10 19.84	2.0309	17 29 57.0	11.747
13	21 12 21.50	2.0244	17 18 10.2	11.812
14	21 14 22.77	2.0179	17 6 19.6	11.875
15	21 16 23.65	2.0114	16 54 25.2	11.937
16	21 18 24.14	2.0051	16 42 27.2	11.997
17	21 20 24.26	1.9988	16 30 25.6	12.056
18	21 22 24.00	1.9926	16 18 20.5	12.114
19	21 24 23.37	1.9864	16 6 11.9	12.171
20	21 26 22.37	1.9802	15 54 0.0	12.226
21	21 28 21.00	1.9742	15 41 44.8	12.281
22	21 30 19.27	1.9682	15 29 26.3	12.335
23	21 32 17.19	1.9624	S.15 17 4.6	12.387

MONDAY, JUNE 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 34 14.76	1.9566	S.15 4 39.9	12.438

PHASES OF THE MOON.

			d	h	m
☾	Last Quarter . . .	May	4	3	25.2
●	New Moon		12	7	46.6
☽	First Quarter		19	18	21.0
○	Full Moon		26	9	56.5

			d	h
☾	Apogee	May	8	3.7
☾	Perigee		23	23.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Spica	W.	71 46 45	2508	73 27 47	2526	75 8 24	2545	76 48 35	2564
	Saturn	W.	48 34 58	2545	50 15 9	2561	51 54 58	2576	53 34 26	2592
	Fomalhaut	E.	58 48 59	2939	57 17 30	2975	55 46 46	3012	54 16 48	3051
	Mars	E.	70 25 52	2761	68 50 33	2782	67 15 41	2801	65 41 15	2821
	α Pegasi	E.	79 55 28	2719	78 19 13	2741	76 43 27	2762	75 8 9	2784
	Venus	E.	108 37 1	2942	107 5 35	2962	105 34 35	2982	104 4 0	3002
2	Spica	W.	85 3 13	2654	86 40 55	2671	88 18 14	2689	89 55 9	2706
	Saturn	W.	61 46 16	2673	63 23 32	2689	65 0 27	2705	66 37 0	2721
	Antares	W.	39 9 38	2651	40 47 24	2669	42 24 45	2687	44 1 43	2704
	Fomalhaut	E.	46 59 34	3276	45 34 54	3330	44 11 17	3386	42 48 45	3448
	Mars	E.	57 55 27	2918	56 23 31	2938	54 52 0	2956	53 20 52	2976
	α Pegasi	E.	67 18 55	2898	65 46 33	2922	64 14 42	2946	62 43 22	2971
	Venus	E.	96 37 18	3102	95 9 11	3121	93 41 27	3141	92 14 7	3159
	Sun	E.	114 55 38	3005	113 25 32	3025	111 55 50	3043	110 26 30	3061
3	Spica	W.	97 54 10	2787	99 28 55	2803	101 3 19	2818	102 37 24	2832
	Saturn	W.	74 34 33	2798	76 9 4	2813	77 43 15	2828	79 17 7	2842
	Antares	W.	52 0 58	2785	53 35 46	2801	55 10 13	2815	56 44 21	2830
	Mars	E.	45 50 59	3065	44 22 6	3082	42 53 34	3099	41 25 23	3115
	α Pegasi	E.	55 14 37	3103	53 46 31	3132	52 19 0	3161	50 52 4	3191
	Venus	E.	85 2 59	3250	83 37 49	3268	82 13 0	3285	80 48 31	3301
	Sun	E.	103 5 19	3148	101 38 8	3164	100 11 16	3181	98 44 44	3197
4	Saturn	W.	87 2 2	2908	88 34 11	2920	90 6 4	2932	91 37 42	2943
	Antares	W.	64 30 26	2898	66 2 48	2910	67 34 54	2922	69 6 45	2934
	Mars	E.	34 9 21	3194	32 43 5	3209	31 17 6	3223	29 51 24	3238
	Venus	E.	73 50 43	3378	72 28 1	3393	71 5 36	3407	69 43 27	3420
	Sun	E.	91 36 37	3270	90 11 51	3283	88 47 20	3296	87 23 4	3309
5	Saturn	W.	99 12 26	2995	100 42 45	3005	102 12 52	3013	103 42 49	3022
	Antares	W.	76 42 32	2985	78 13 4	2993	79 43 25	3002	81 13 35	3009
	Venus	E.	62 56 16	3480	61 35 29	3490	60 14 54	3500	58 54 30	3511
	Sun	E.	80 25 13	3365	79 2 17	3375	77 39 32	3384	76 16 57	3393
6	Antares	W.	88 42 10	3043	90 11 29	3048	91 40 42	3053	93 9 49	3058
	α Aquilæ	W.	45 13 34	4732	46 14 7	4652	47 15 47	4580	48 18 29	4515
	Venus	E.	52 15 8	3554	50 55 43	3561	49 36 26	3568	48 17 17	3575
	Sun	E.	69 26 26	3431	68 4 44	3437	66 43 9	3443	65 21 41	3447
7	Antares	W.	100 34 11	3073	102 2 53	3076	103 31 32	3077	105 0 10	3078
	α Aquilæ	W.	53 45 5	4255	54 52 39	4215	56 0 51	4177	57 9 39	4142
	Venus	E.	41 43 14	3604	40 24 44	3610	39 6 20	3614	37 48 1	3619
	Sun	E.	58 35 38	3468	57 14 38	3471	55 53 42	3473	54 32 48	3475
8	α Aquilæ	W.	63 1 25	3997	64 13 8	3973	65 25 14	3950	66 37 43	3929
	Fomalhaut	W.	36 20 27	4055	37 31 12	3990	38 43 1	3931	39 55 49	3879
	Sun	E.	47 48 45	3480	46 27 59	3481	45 7 14	3481	43 46 29	3480
9	α Aquilæ	W.	72 45 6	3839	73 59 28	3824	75 14 5	3810	76 28 57	3796
	Fomalhaut	W.	46 11 54	3675	47 29 8	3642	48 46 57	3612	50 5 18	3585
	Sun	E.	37 2 37	3479	35 41 49	3478	34 21 0	3477	33 0 10	3477

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Spica	W.	78 28 20	2582	80 7 40	2599	81 46 36	2618	83 25 7	2636
	SATURN	W.	55 13 32	2608	56 52 16	2624	58 30 38	2640	60 8 38	2657
	Fomalhaut	E.	52 47 38	3091	51 19 17	3133	49 51 48	3178	48 25 13	3225
	MARS	E.	64 7 15	2841	62 33 40	2861	61 0 31	2880	59 27 46	2900
	α Pegasi	E.	73 33 20	2805	71 58 59	2828	70 25 8	2852	68 51 47	2874
	VENUS	E.	102 33 50	3022	101 4 5	3043	99 34 45	3062	98 5 49	3082
2	Spica	W.	91 31 41	2722	93 7 51	2739	94 43 39	2756	96 19 5	2772
	SATURN	W.	68 13 12	2737	69 49 3	2753	71 24 33	2768	72 59 43	2783
	Antares	W.	45 38 18	2720	47 14 31	2738	48 50 21	2753	50 25 50	2769
	Fomalhaut	E.	41 27 23	3514	40 7 14	3586	38 48 24	3663	37 30 57	3748
	MARS	E.	51 50 9	2993	50 19 48	3012	48 49 50	3030	47 20 14	3047
	α Pegasi	E.	61 12 33	2997	59 42 16	3022	58 12 30	3048	56 43 17	3075
	VENUS	E.	90 47 9	3178	89 20 34	3197	87 54 21	3214	86 28 29	3233
	SUN	E.	108 57 33	3079	107 28 58	3096	106 0 44	3114	104 32 51	3131
3	Spica	W.	104 11 10	2846	105 44 38	2861	107 17 47	2874	108 50 39	2888
	SATURN	W.	80 50 41	2855	82 23 57	2869	83 56 56	2883	85 29 37	2895
	Antares	W.	58 18 10	2844	59 51 41	2859	61 24 53	2872	62 57 48	2885
	MARS	E.	39 57 32	3132	38 30 1	3148	37 2 49	3163	35 35 56	3178
	α Pegasi	E.	49 25 44	3223	48 0 2	3256	46 34 59	3290	45 10 36	3326
	VENUS	E.	79 24 21	3318	78 0 30	3333	76 36 57	3348	75 13 41	3364
	SUN	E.	97 18 31	3212	95 52 36	3227	94 26 59	3242	93 1 40	3256
4	SATURN	W.	93 9 6	2954	94 40 16	2965	96 11 12	2976	97 41 55	2985
	Antares	W.	70 38 21	2945	72 9 43	2955	73 40 52	2965	75 11 48	2975
	MARS	E.	28 26 0	3252	27 0 52	3267	25 36 2	3282	24 11 29	3298
	VENUS	E.	68 21 33	3433	66 59 54	3445	65 38 28	3457	64 17 16	3468
	SUN	E.	85 59 3	3321	84 35 16	3332	83 11 42	3344	81 48 21	3355
5	SATURN	W.	105 12 35	3030	106 42 11	3037	108 11 38	3045	109 40 55	3052
	Antares	W.	82 43 36	3018	84 13 27	3024	85 43 10	3031	87 12 44	3038
	VENUS	E.	57 34 18	3520	56 14 16	3529	54 54 24	3537	53 34 41	3546
	SUN	E.	74 54 33	3401	73 32 18	3410	72 10 13	3417	70 48 16	3423
6	Antares	W.	94 38 50	3062	96 7 46	3065	97 36 38	3069	99 5 26	3071
	α Aquilæ	W.	49 22 8	4454	50 26 41	4399	51 32 3	4347	52 38 12	4300
	VENUS	E.	46 58 15	3581	45 39 20	3587	44 20 32	3593	43 1 50	3598
	SUN	E.	64 0 18	3453	62 39 1	3457	61 17 49	3461	59 56 41	3465
7	Antares	W.	106 28 46	3079	107 57 21	3079	109 25 56	3079	110 54 31	3079
	α Aquilæ	W.	58 19 0	4109	59 28 53	4078	60 39 16	4049	61 50 7	4022
	VENUS	E.	36 29 47	3624	35 11 39	3629	33 53 36	3635	32 35 39	3639
	SUN	E.	53 11 56	3477	51 51 6	3479	50 30 18	3480	49 9 31	3480
8	α Aquilæ	W.	67 50 33	3910	69 3 43	3890	70 17 13	3872	71 31 1	3856
	Fomalhaut	W.	41 9 30	3830	42 24 1	3787	43 39 17	3746	44 55 16	3709
	SUN	E.	42 25 43	3480	41 4 57	3480	39 44 11	3480	38 23 24	3480
9	α Aquilæ	W.	77 44 3	3784	78 59 22	3771	80 14 54	3760	81 30 38	3749
	Fomalhaut	W.	51 24 9	3559	52 43 28	3535	54 3 14	3512	55 23 25	3489
	SUN	E.	31 39 20	3477	30 18 30	3478	28 57 41	3478	27 36 52	3480

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
10	*α* Aquilæ	W.	82 46 33	3740	84 2 38	3730	85 18 53	3722	86 35 17	3713
	Fomalhaut	W.	56 44 1	3469	58 5 0	3450	59 26 20	3431	60 48 1	3414
	Mars	W.	33 11 39	3332	34 35 14	3324	35 58 58	3317	37 22 50	3309
	Sun	E.	26 16 5	3482	24 55 21	3486	23 34 41	3492	22 14 8	3499
14	Sun	W.	19 53 46	3275	21 18 27	3250	22 43 37	3228	24 9 13	3207
	Pollux	E.	38 9 58	2817	36 35 52	2810	35 1 37	2804	33 27 14	2798
	Jupiter	E.	49 25 49	2843	47 52 17	2835	46 18 34	2826	44 44 40	2818
	Regulus	E.	74 56 51	2794	73 22 15	2785	71 47 27	2776	70 12 28	2768
15	Sun	W.	31 22 49	3124	32 50 29	3110	34 18 26	3097	35 46 39	3083
	Jupiter	E.	36 52 29	2776	35 17 30	2767	33 42 19	2759	32 6 58	2750
	Regulus	E.	62 14 45	2725	60 38 38	2716	59 2 19	2707	57 25 49	2698
	Spica	E.	116 16 45	2728	114 40 42	2719	113 4 27	2710	111 28 0	2701
16	Sun	W.	43 11 41	3022	44 41 26	3011	46 11 25	2999	47 41 39	2988
	Regulus	E.	49 20 18	2653	47 42 35	2644	46 4 40	2635	44 26 33	2626
	Spica	E.	103 22 47	2656	101 45 8	2646	100 7 16	2638	98 29 12	2629
17	Sun	W.	55 16 22	2931	56 48 1	2920	58 19 54	2909	59 52 2	2898
	Spica	E.	90 15 41	2581	88 36 20	2571	86 56 45	2561	85 16 57	2551
	Saturn	E.	112 29 25	2596	110 50 25	2586	109 11 11	2576	107 31 43	2565
18	Sun	W.	67 36 17	2841	69 9 52	2830	70 43 41	2818	72 17 45	2808
	Spica	E.	76 54 32	2502	75 13 22	2492	73 31 57	2482	71 50 19	2472
	Saturn	E.	99 10 45	2513	97 29 50	2503	95 48 41	2493	94 7 18	2482
19	Sun	W.	80 11 44	2750	81 47 17	2740	83 23 4	2729	84 59 6	2717
	Spica	E.	63 18 31	2421	61 35 26	2411	59 52 7	2401	58 8 33	2390
	Saturn	E.	85 36 45	2431	83 53 55	2422	82 10 51	2412	80 27 33	2402
	Antares	E.	109 10 52	2417	107 27 42	2408	105 44 18	2397	104 0 39	2387
20	Sun	W.	93 3 0	2662	94 40 31	2651	96 18 17	2640	97 56 17	2629
	Pollux	W.	41 41 16	2354	43 25 57	2343	45 10 54	2332	46 56 7	2321
	Jupiter	W.	29 20 50	2387	31 4 44	2376	32 48 53	2366	34 33 17	2355
	Spica	E.	49 27 4	2340	47 42 3	2330	45 56 47	2321	44 11 18	2311
	Saturn	E.	71 47 33	2354	70 2 52	2345	68 17 58	2336	66 32 51	2327
	Antares	E.	95 18 41	2335	93 33 33	2326	91 48 11	2315	90 2 34	2305
21	Sun	W.	106 9 49	2580	107 49 12	2570	109 28 48	2561	111 8 37	2552
	Pollux	W.	55 46 4	2270	57 32 48	2260	59 19 46	2251	61 6 58	2242
	Jupiter	W.	43 18 59	2306	45 4 50	2297	46 50 54	2287	48 37 12	2279
	Saturn	E.	57 44 12	2287	55 57 54	2281	54 11 27	2274	52 24 50	2269
	Antares	E.	81 10 52	2258	79 23 50	2248	77 36 34	2239	75 49 5	2231
22	Sun	W.	119 30 37	2512	121 11 33	2505	122 52 39	2499	124 33 54	2493
	Pollux	W.	70 6 12	2200	71 54 39	2193	73 43 17	2186	75 32 6	2180
	Jupiter	W.	57 31 50	2238	59 19 21	2231	61 7 2	2224	62 54 54	2218
	Regulus	W.	33 8 6	2192	34 56 46	2184	36 45 38	2177	38 34 40	2170
	Saturn	E.	43 29 57	2250	41 42 44	2249	39 55 29	2249	38 8 14	2249
	Antares	E.	66 48 34	2191	64 59 53	2184	63 11 1	2177	61 21 59	2170
	α Aquilæ	E.	116 23 38	3087	114 55 12	3054	113 26 6	3023	111 56 22	2995

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV$^{\text{h}}$.	P. L. of Diff.	XVIII$^{\text{h}}$.	P. L. of Diff.	XXI$^{\text{h}}$.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
10	α Aquilæ	W.	87 51 50	3707	89 8 30	3699	90 25 18	3693	91 42 12	3688
	Fomalhaut	W.	62 10 2	3397	63 32 22	3380	64 55 1	3365	66 17 57	3350
	MARS	W.	38 46 51	3302	40 11 0	3294	41 35 18	3288	42 59 44	3280
	SUN	E.	20 53 43	3510	19 33 30	3525	18 13 33	3543	16 53 56	3565
14	SUN	W.	25 35 14	3188	27 1 37	3170	28 28 22	3154	29 55 26	3138
	Pollux	E.	31 52 43	2792	30 18 4	2787	28 43 19	2782	27 8 27	2778
	JUPITER	E.	43 10 36	2809	41 36 20	2801	40 1 54	2793	38 27 17	2785
	Regulus	E.	68 37 18	2760	67 1 57	2750	65 26 24	2742	63 50 40	2734
15	SUN	W.	37 15 9	3071	38 43 54	3058	40 12 55	3046	41 42 11	3034
	JUPITER	E.	30 31 25	2742	28 55 41	2734	27 19 46	2725	25 43 40	2717
	Regulus	E.	55 49 7	2689	54 12 13	2681	52 35 7	2672	50 57 49	2662
	Spica	E.	109 51 22	2692	108 14 32	2683	106 37 29	2674	105 0 14	2665
16	SUN	W.	49 12 7	2977	50 42 49	2965	52 13 46	2954	53 44 57	2942
	Regulus	E.	42 48 13	2616	41 9 40	2607	39 30 55	2598	37 51 57	2588
	Spica	E.	96 50 56	2618	95 12 26	2610	93 33 44	2600	91 54 49	2591
17	SUN	W.	61 24 24	2886	62 57 1	2875	64 29 52	2864	66 2 57	2852
	Spica	E.	83 36 55	2542	81 56 40	2532	80 16 11	2522	78 35 28	2512
	SATURN	E.	105 52 0	2555	104 12 3	2544	102 31 51	2534	100 51 25	2524
18	SUN	W.	73 52 3	2796	75 26 36	2785	77 1 24	2774	78 36 26	2762
	Spica	E.	70 8 26	2462	68 26 19	2451	66 43 57	2441	65 1 21	2431
	SATURN	E.	92 25 40	2472	90 43 48	2462	89 1 41	2452	87 19 20	2442
19	SUN	W.	86 35 23	2706	88 11 55	2695	89 48 42	2684	91 25 44	2673
	Spica	E.	56 24 44	2380	54 40 41	2370	52 56 23	2360	51 11 51	2350
	SATURN	E.	78 44 1	2392	77 0 15	2382	75 16 15	2373	73 32 1	2363
	Antares	E.	102 16 45	2376	100 32 36	2366	98 48 13	2355	97 3 34	2346
20	SUN	W.	99 34 32	2619	101 13 1	2610	102 51 43	2599	104 30 39	2589
	Pollux	W.	48 41 36	2311	50 27 20	2300	52 13 20	2289	53 59 35	2280
	JUPITER	W.	36 17 56	2345	38 2 50	2335	39 47 59	2325	41 33 22	2315
	Spica	E.	42 25 34	2301	40 39 36	2292	38 53 25	2283	37 7 0	2274
	SATURN	E.	64 47 31	2319	63 1 59	2311	61 16 15	2302	59 30 19	2295
	Antares	E.	88 16 42	2296	86 30 36	2285	84 44 15	2276	82 57 40	2267
21	SUN	W.	112 48 38	2543	114 28 51	2535	116 9 15	2527	117 49 51	2520
	Pollux	W.	62 54 23	2233	64 42 2	2225	66 29 53	2216	68 17 57	2208
	JUPITER	W.	50 23 43	2270	52 10 27	2262	53 57 23	2253	55 44 31	2246
	SATURN	E.	50 38 5	2264	48 51 12	2259	47 4 12	2256	45 17 7	2252
	Antares	E.	74 1 24	2223	72 13 30	2214	70 25 23	2206	68 37 4	2198
22	SUN	W.	126 15 17	2487	127 56 48	2482	129 38 26	2478	131 20 10	2474
	Pollux	W.	77 21 4	2173	79 10 12	2168	80 59 28	2162	82 48 53	2157
	JUPITER	W.	64 42 55	2211	66 31 6	2206	68 19 25	2200	70 7 53	2195
	Regulus	W.	40 23 52	2165	42 13 13	2159	44 2 43	2153	45 52 21	2148
	SATURN	E.	36 21 0	2253	34 33 51	2258	32 46 49	2265	30 59 58	2276
	Antares	E.	59 32 46	2164	57 43 24	2159	55 53 54	2153	54 4 16	2149
	α Aquilæ	E.	110 26 3	2969	108 55 12	2946	107 23 51	2925	105 52 4	2906

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Pollux	W.	84 38 25	2153	86 28 4	2148	88 17 50	2145	90 7 41	2141
	JUPITER	W.	71 56 28	2190	73 45 10	2186	75 33 58	2183	77 22 51	2180
	Regulus	W.	47 42 7	2144	49 31 59	2139	51 21 58	2136	53 12 2	2133
	Antares	E.	52 14 31	2145	50 24 39	2140	48 34 41	2136	46 44 37	2133
	α Aquilæ	E.	104 19 53	2889	102 47 20	2874	101 14 28	2861	99 41 19	2850
24	Pollux	W.	99 17 54	2134	101 8 2	2133	102 58 11	2134	104 48 19	2134
	JUPITER	W.	86 28 15	2171	88 17 26	2170	90 6 38	2171	91 55 49	2172
	Regulus	W.	62 23 21	2124	64 13 43	2124	66 4 6	2124	67 54 28	2125
	α Aquilæ	E.	91 52 46	2821	90 18 45	2821	88 44 44	2821	87 10 44	2825
25	JUPITER	W.	101 1 4	2186	102 49 53	2190	104 38 36	2194	106 27 12	2200
	Regulus	W.	77 5 41	2138	78 55 42	2142	80 45 37	2147	82 35 25	2153
	α Aquilæ	E.	79 22 30	2867	77 49 29	2882	76 16 47	2898	74 44 26	2916
	Fomalhaut	E.	103 57 26	2465	102 15 24	2465	100 33 22	2466	98 51 21	2469
26	Regulus	W.	91 42 4	2187	93 30 51	2196	95 19 24	2205	97 7 44	2215
	Spica	W.	37 41 38	2194	39 30 14	2202	41 18 38	2211	43 6 49	2220
	α Aquilæ	E.	67 9 28	3044	65 40 10	3078	64 11 34	3114	62 43 42	3155
	Fomalhaut	E.	90 22 39	2497	88 41 22	2507	87 0 18	2517	85 19 28	2528
27	Spica	W.	52 4 1	2274	53 50 38	2287	55 36 56	2300	57 22 56	2313
	SATURN	W.	31 6 34	2382	32 50 34	2382	34 34 34	2385	36 18 30	2389
	Fomalhaut	E.	76 59 45	2601	75 20 52	2619	73 42 23	2638	72 4 20	2658
	α Pegasi	E.	98 41 52	2476	97 0 5	2487	95 18 33	2499	93 37 18	2511
28	Spica	W.	66 7 59	2384	67 51 57	2398	69 35 34	2414	71 18 49	2430
	SATURN	W.	44 55 56	2431	46 38 46	2442	48 21 21	2454	50 3 39	2467
	Fomalhaut	E.	64 1 24	2779	62 26 28	2806	60 52 8	2835	59 18 26	2867
	α Pegasi	E.	85 15 40	2583	83 36 22	2600	81 57 27	2617	80 18 55	2635
	MARS	E.	96 18 54	2635	94 40 46	2651	93 3 0	2667	91 25 36	2684
29	Spica	W.	79 49 24	2510	81 30 23	2527	83 10 58	2543	84 51 11	2561
	SATURN	W.	58 30 30	2536	60 10 53	2551	61 50 56	2566	63 30 38	2582
	Antares	W.	33 55 48	2508	35 36 50	2525	37 17 29	2541	38 57 45	2558
	Fomalhaut	E.	51 40 42	3052	50 11 33	3096	48 43 18	3142	47 15 59	3193
	α Pegasi	E.	72 12 33	2733	70 36 37	2753	69 1 8	2775	67 26 8	2798
	MARS	E.	83 24 14	2770	81 49 7	2788	80 14 23	2805	78 40 2	2824
30	Spica	W.	93 6 29	2643	94 44 25	2660	96 21 58	2677	97 59 9	2692
	SATURN	W.	71 43 48	2660	73 21 22	2675	74 58 35	2691	76 35 27	2707
	Antares	W.	47 13 21	2641	48 51 20	2657	50 28 57	2674	52 6 12	2690
	α Pegasi	E.	59 38 39	2920	58 6 45	2946	56 35 24	2973	55 4 37	3001
	MARS	E.	70 54 7	2913	69 22 5	2931	67 50 26	2949	66 19 9	2967
	α Arietis	E.	100 53 57	2660	99 16 23	2676	97 39 11	2692	96 2 21	2709
31	Spica	W.	105 59 44	2772	107 34 49	2787	109 9 34	2802	110 43 59	2817
	SATURN	W.	84 34 34	2784	86 9 23	2799	87 43 52	2814	89 18 2	2828
	Antares	W.	60 7 5	2769	61 42 13	2784	63 17 2	2798	64 51 32	2814
	MARS	E.	58 48 18	3054	57 19 12	3071	55 50 27	3087	54 22 2	3105
	α Arietis	E.	88 3 30	2787	86 28 45	2802	84 54 20	2817	83 20 14	2832
	SUN	E.	121 58 34	3133	120 31 5	3148	119 3 54	3164	117 37 2	3180

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Pollux	W.	91 57 37	2139	93 47 37	2137	95 37 40	2135	97 27 46	2134
	JUPITER	W.	79 11 49	2177	81 0 51	2174	82 49 57	2173	84 39 5	2172
	Regulus	W.	55 2 11	2130	56 52 24	2128	58 42 41	2126	60 33 0	2125
	Antares	E.	44 54 28	2130	43 4 15	2128	41 13 58	2126	39 23 39	2125
	α Aquilæ	E.	98 7 56	2841	96 34 21	2833	95 0 36	2828	93 26 44	2823
24	Pollux	W.	106 38 26	2136	108 28 30	2138	110 18 31	2141	112 8 27	2145
	JUPITER	W.	93 44 58	2174	95 34 5	2176	97 23 9	2178	99 12 9	2182
	Regulus	W.	69 44 49	2126	71 35 8	2129	73 25 23	2132	75 15 34	2134
	α Aquilæ	E.	85 36 48	2829	84 2 58	2836	82 29 17	2845	80 55 47	2855
25	JUPITER	W.	108 15 39	2206	110 3 57	2213	111 52 5	2220	113 40 2	2228
	Regulus	W.	84 25 4	2159	86 14 34	2165	88 3 55	2172	89 53 5	2179
	α Aquilæ	E.	73 12 28	2937	71 40 56	2961	70 9 54	2986	68 39 24	3014
	Fomalhaut	E.	97 9 24	2472	95 27 31	2477	93 45 45	2482	92 4 7	2489
26	Regulus	W.	98 55 49	2225	100 43 39	2236	102 31 13	2247	104 18 31	2259
	Spica	W.	44 54 46	2230	46 42 29	2241	48 29 56	2251	50 17 7	2263
	α Aquilæ	E.	61 16 39	3198	59 50 27	3245	58 25 11	3295	57 0 54	3351
	Fomalhaut	E.	83 38 54	2540	81 58 37	2554	80 18 39	2569	78 39 1	2585
27	Spica	W.	59 8 37	2326	60 53 58	2340	62 38 59	2355	64 23 39	2368
	SATURN	W.	38 2 20	2396	39 46 1	2403	41 29 32	2411	43 12 51	2421
	Fomalhaut	E.	70 26 44	2680	68 49 37	2702	67 13 0	2726	65 36 55	2752
	α Pegasi	E.	91 56 20	2524	90 15 40	2538	88 35 20	2553	86 55 20	2567
28	Spica	W.	73 1 41	2445	74 44 11	2462	76 26 18	2478	78 8 2	2494
	SATURN	W.	51 45 39	2480	53 27 20	2493	55 8 43	2507	56 49 46	2521
	Fomalhaut	E.	57 45 25	2900	56 13 6	2935	54 41 31	2971	53 10 42	3010
	α Pegasi	E.	78 40 48	2653	77 3 5	2672	75 25 48	2692	73 48 57	2712
	MARS	E.	89 48 34	2701	88 11 55	2717	86 35 38	2735	84 59 44	2733
29	Spica	W.	86 31 0	2577	88 10 26	2593	89 49 30	2610	91 28 11	2627
	SATURN	W.	65 9 58	2596	66 48 58	2612	68 27 36	2628	70 5 53	2644
	Antares	W.	40 37 38	2574	42 17 8	2591	43 56 15	2608	45 34 59	2624
	Fomalhaut	E.	45 49 41	3247	44 24 27	3304	43 0 20	3366	41 37 25	3434
	α Pegasi	E.	65 51 37	2821	64 17 36	2845	62 44 6	2869	61 11 7	2893
	MARS	E.	77 6 5	2842	75 32 31	2859	73 59 20	2877	72 26 32	2895
30	Spica	W.	99 35 59	2709	101 12 27	2725	102 48 33	2741	104 24 19	2756
	SATURN	W.	78 11 57	2722	79 48 7	2738	81 23 56	2753	82 59 25	2769
	Antares	W.	53 43 5	2706	55 19 37	2722	56 55 47	2738	58 31 36	2753
	α Pegasi	E.	53 34 26	3030	52 4 51	3061	50 35 54	3093	49 7 36	3126
	MARS	E.	64 48 15	2985	63 17 43	3002	61 47 33	3020	60 17 45	3037
	α Arietis	E.	94 25 53	2725	92 49 46	2741	91 14 0	2756	89 38 35	2772
31	Spica	W.	112 18 5	2831	113 51 53	2845	115 25 22	2859	116 58 34	2873
	SATURN	W.	90 51 54	2842	92 25 27	2856	93 58 42	2870	95 31 39	2883
	Antares	W.	66 25 42	2828	67 59 34	2842	69 33 7	2855	71 6 23	2869
	MARS	E.	52 53 58	3120	51 26 13	3137	49 58 48	3153	48 31 42	3168
	α Arietis	E.	81 46 28	2846	80 13 0	2861	78 39 51	2875	77 7 0	2888
	SUN	E.	116 10 29	3194	114 44 13	3209	113 18 15	3224	111 52 34	3237

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from / Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	4 39 31.30	10.242	N.22 9 56.9	+19.67	15 48.28	68.45	2 20.22	0.384
Tues.	2	4 43 37.31	10.259	22 17 37.4	18.70	15 48.14	68.50	2 10.79	0.401
Wed.	3	4 47 43.71	10.275	22 24 54.5	17.73	15 48.01	68.55	2 0.98	0.417
Thur.	4	4 51 50.49	10.290	22 31 48.3	+16.75	15 47.88	68.60	1 50.78	0.432
Frid.	5	4 55 57.62	10.304	22 38 18.4	15.76	15 47.75	68.65	1 40.24	0.446
Sat.	6	5 0 5.10	10.317	22 44 24.6	14.76	15 47.63	68.69	1 29.35	0.460
SUN.	7	5 4 12.88	10.330	22 50 7.0	+13.76	15 47.51	68.73	1 18.16	0.473
Mon.	8	5 8 20.96	10.342	22 55 25.4	12.76	15 47.40	68.76	1 6.67	0.484
Tues.	9	5 12 29.30	10.353	23 0 19.5	11.75	15 47.30	68.80	0 54.92	0.495
Wed.	10	5 16 37.89	10.362	23 4 49.3	+10.73	15 47.20	68.83	0 42.92	0.504
Thur.	11	5 20 46.69	10.371	23 8 54.7	9.71	15 47.10	68.86	0 30.71	0.513
Frid.	12	5 24 55.68	10.378	23 12 35.6	8.69	15 47.01	68.88	0 18.31	0.520
Sat.	13	5 29 4.84	10.384	23 15 51.9	+ 7.67	15 46.93	68.90	0 5.74	0.526
SUN.	14	5 33 14.14	10.389	23 18 43.6	6.64	15 46.85	68.92	0 6.96	0.531
Mon.	15	5 37 23.54	10.394	23 21 10.5	5.61	15 46.78	68.94	0 19.77	0.536
Tues.	16	5 41 33.03	10.397	23 23 12.8	+ 4.58	15 46.71	68.95	0 32.66	0.539
Wed.	17	5 45 42.58	10.399	23 24 50.2	3.55	15 46.65	68.96	0 45.62	0.540
Thur.	18	5 49 52.16	10.399	23 26 2.9	2.51	15 46.59	68.97	0 58.60	0.541
Frid.	19	5 54 1.76	10.399	23 26 50.8	+ 1.48	15 46.54	68.97	1 11.60	0.541
Sat.	20	5 58 11.33	10.398	23 27 14.0	+ 0.45	15 46.49	68.97	1 24.59	0.540
SUN.	21	6 2 20.88	10.397	23 27 12.3	− 0.59	15 46.44	68.97	1 37.54	0.538
Mon.	22	6 6 30.37	10.394	23 26 45.9	− 1.62	15 46.40	68.96	1 50.43	0.535
Tues.	23	6 10 39.77	10.390	23 25 54.7	2.65	15 46.36	68.95	2 3.24	0.532
Wed.	24	6 14 49.09	10.385	23 24 38.8	3.68	15 46.32	68.94	2 15.96	0.528
Thur.	25	6 18 58.28	10.380	23 22 58.3	− 4.70	15 46.29	68.92	2 28.57	0.522
Frid.	26	6 23 7.34	10.374	23 20 53.1	5.73	15 46.26	68.90	2 41.03	0.516
Sat.	27	6 27 16.24	10.368	23 18 23.4	6.75	15 46.24	68.88	2 53.34	0.509
SUN.	28	6 31 24.98	10.360	23 15 29.1	− 7.77	15 46.21	68.85	3 5.49	0.501
Mon.	29	6 35 33.52	10.352	23 12 10.4	8.79	15 46.19	68.82	3 17.44	0.493
Tues.	30	6 39 41.85	10.342	23 8 27.2	9.80	15 46.17	68.79	3 29.18	0.484
Wed.	31	6 43 49.95	10.332	N.23 4 19.8	−10.81	15 46.16	68.75	3 40.69	0.474

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.19 from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign − indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	4 39 31.70	10.241	N.22 9 57.7	+19.66	2 20.20	0.384	4 41 51.90
Tues.	2	4 43 37.68	10.257	22 17 38.0	18.69	2 10.78	0.401	4 45 48.46
Wed.	3	4 47 44.06	10.273	22 24 55.2	17.72	2 0.96	0.417	4 49 45.02
Thur.	4	4 51 50.81	10.289	22 31 48.8	+16.74	1 50.77	0.432	4 53 41.58
Frid.	5	4 55 57.91	10.303	22 38 18.8	15.76	1 40.22	0.446	4 57 38.14
Sat.	6	5 0 5.35	10.317	22 44 25.0	14.76	1 29.34	0.459	5 1 34.69
SUN.	7	5 4 13.11	10.329	22 50 7.4	+13.76	1 18.15	0.472	5 5 31.25
Mon.	8	5 8 21.15	10.341	22 55 25.6	12.76	1 6.66	0.484	5 9 27.81
Tues.	9	5 12 29.46	10.351	23 0 19.6	11.75	0 54.91	0.495	5 13 24.37
Wed.	10	5 16 38.01	10.361	23 4 49.4	+10.73	0 42.92	0.504	5 17 20.93
Thur.	11	5 20 46.78	10.369	23 8 54.8	9.71	0 30.71	0.513	5 21 17.49
Frid.	12	5 24 55.74	10.377	23 12 35.6	8.69	0 18.31	0.520	5 25 14.04
Sat.	13	5 29 4.86	10.383	23 15 51.9	+ 7.67	0 5.74	0.526	5 29 10.60
SUN.	14	5 33 14.12	10.388	23 18 43.6	6.64	0 6.96	0.531	5 33 7.16
Mon.	15	5 37 23.49	10.392	23 21 10.5	5.61	0 19.77	0.535	5 37 3.72
Tues.	16	5 41 32.94	10.395	23 23 12.8	+ 4.58	0 32.66	0.538	5 41 0.28
Wed.	17	5 45 42.45	10.397	23 24 50.2	3.55	0 45.61	0.540	5 44 56.84
Thur	18	5 49 51.99	10.398	23 26 2.9	2.51	0 58.60	0.541	5 48 53.40
Frid.	19	5 54 1.55	10.398	23 26 50.8	+ 1.48	1 11.59	0.541	5 52 49.96
Sat.	20	5 58 11.09	10.397	23 27 14.0	+ 0.45	1 24.57	0.540	5 56 46.52
SUN.	21	6 2 20.60	10.395	23 27 12.3	− 0.58	1 37.53	0.538	6 0 43.07
Mon.	22	6 6 30.05	10.392	23 26 45.9	− 1.61	1 50.42	0.535	6 4 39.63
Tues.	23	6 10 39.42	10.388	23 25 54.8	2.64	2 3.23	0.532	6 8 36.19
Wed.	24	6 14 48.69	10.384	23 24 39.0	3.67	2 15.94	0.527	6 12 32.75
Thur.	25	6 18 57.85	10.379	23 22 58.5	− 4.70	2 28.55	0.522	6 16 29.31
Frid.	26	6 23 6.88	10.373	23 20 53.4	5.73	2 41.01	0.516	6 20 25.87
Sat.	27	6 27 15.75	10.366	23 18 23.7	6.75	2 53.32	0.509	6 24 22.43
SUN.	28	6 31 24.45	10.358	23 15 29.5	− 7.77	3 5.46	0.502	6 28 18.98
Mon.	29	6 35 32.96	10.350	23 12 10.8	8.78	3 17.41	0.494	6 32 15.54
Tues.	30	6 39 41.25	10.341	23 8 27.8	9.80	3 29.15	0.484	6 36 12.10
Wed.	31	6 43 49.32	10.331	N.23 4 20.5	- 10.81	3 40.66	0.474	6 40 8.66

Note. - The semidiameter for mean noon may be assumed the same as that for apparent noon
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign — indicates that north declinations are decreasing.

Diff. for 1 Hour,
+9ˢ 8565
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S							Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.		
		λ	λ′						
		° ′ ″	′ ″	″	″				h m s
1	153	71 25 52.9	25 23.8	143.61	− 0.20	0.0062400	+26.5		19 14 58.36
2	154	72 23 19.2	22 50.0	143.58	− 0.07	0.0063029	25.8		19 11 2.45
3	155	73 20 44.9	20 15.5	143.56	+ 0.07	0.0063642	25.1		19 7 6.54
4	156	74 18 10.0	17 40.4	143.53	+ 0.20	0.0064235	+24.3		19 3 10.63
5	157	75 15 34.4	15 4.6	143.51	0.31	0.0064810	23.5		18 59 14.72
6	158	76 12 58.4	12 28.2	143.48	0.39	0.0065362	22.6		18 55 18.80
7	159	77 10 21.6	9 51.2	143.46	+ 0.46	0.0065894	+21.6		18 51 22.89
8	160	78 7 44.3	7 13.8	143.43	0.50	0.0066401	20.6		18 47 26.98
9	161	79 5 6.3	4 35.7	143.40	0.50	0.0066884	19.6		18 43 31.07
10	162	80 2 27.7	1 56.9	143.38	+ 0.48	0.0067342	+18.6		18 39 35.15
11	163	80 59 48.5	59 17.5	143.35	0.43	0.0067775	17.5		18 35 39.24
12	164	81 57 8.4	56 37.2	143.32	0.35	0.0068182	16.5		18 31 43.33
13	165	82 54 27.7	53 56.3	143.29	+ 0.25	0.0068565	+15.4		18 27 47.41
14	166	83 51 46.3	51 14.7	143.26	+ 0.13	0.0068922	14.4		18 23 51.50
15	167	84 49 4.0	48 32.2	143.22	0.00	0.0069256	13.4		18 19 55.59
16	168	85 46 21.0	45 49.0	143.19	− 0.13	0.0069566	+12.5		18 15 59.68
17	169	86 43 37.2	43 5.1	143.16	0.27	0.0069854	11.6		18 12 3.76
18	170	87 40 52.7	40 20.4	143.13	0.38	0.0070123	10.7		18 8 7.85
19	171	88 38 7.4	37 34.9	143.10	− 0.49	0.0070369	+ 9.9		18 4 11.94
20	172	89 35 21.4	34 48.7	143.07	0.57	0.0070598	9.2		18 0 16.02
21	173	90 32 34.8	32 1.9	143.04	0.62	0.0070810	8.5		17 56 20.11
22	174	91 29 47.6	29 14.5	143.02	− 0.64	0.0071005	+ 7.8		17 52 24.20
23	175	92 26 59.9	26 26.6	143.00	0.63	0.0071184	7.1		17 48 28.29
24	176	93 24 11.8	23 38.3	142.99	0.59	0.0071348	6.5		17 44 32.37
25	177	94 21 23.3	20 49.6	142.98	− 0.53	0.0071500	+ 6.0		17 40 36.46
26	178	95 18 34.6	18 0.7	142.97	0.44	0.0071636	5.4		17 36 40.55
27	179	96 15 45.9	15 11.9	142.96	0.33	0.0071757	4.7		17 32 44.64
28	180	97 12 57.0	12 22.8	142.96	− 0.20	0.0071864	+ 4.1		17 28 48.72
29	181	98 10 8.1	9 33.7	142.97	− 0.07	0.0071957	3.5		17 24 52.81
30	182	99 7 19.4	6 44.8	142.97	+ 0.07	0.0072031	2.8		17 20 56.90
31	183	100 4 30.8	3 56.0	142.98	+ 0.20	0.0072090	+ 2.1		17 17 0.98

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^{d}.0$.

Diff. for 1 Hour,
$-9^{s}.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 8.1	15 3.3	55 26.0	−1.56	55 8.3	−1.39	17 22.7	1.75	19.7
2	14 59.0	14 55.4	54 52.7	1.20	54 39.4	1.00	18 3.6	1.66	20.7
3	14 52.5	14 50.3	54 28.7	0.78	54 20.6	0.57	18 43.0	1.63	21.7
4	14 48.8	14 47.9	54 15.0	−0.36	54 11.9	−0.15	19 22.1	1.64	22.7
5	14 47.8	14 48.3	54 11.4	+0.05	54 13.2	+0.25	20 2.1	1.70	23.7
6	14 49.4	14 51.1	54 17.3	0.43	54 23.6	0.60	20 44.0	1.81	24.7
7	14 53.3	14 56.1	54 31.8	+0.76	54 41.9	+0.90	21 29.0	1.95	25.7
8	14 59.2	15 2.7	54 53.5	1.02	55 6.4	1.13	22 17.7	2.11	26.7
9	15 6.5	15 10.6	55 20.5	1.21	55 35.4	1.27	23 10.1	2.26	27.7
10	15 14.9	15 19.2	55 51.0	+1.32	56 7.0	+1.34	☌		28.7
11	15 23.7	15 28.1	56 23.2	1.35	56 39.4	1.34	0 5.7	2.36	0.1
12	15 32.4	15 36.6	56 55.3	1.31	57 10.9	1.28	1 2.8	2.38	1.1
13	15 40.8	15 44.7	57 26.0	+1.23	57 40.5	+1.18	1 59.4	2.33	2.1
14	15 48.5	15 52.0	57 54.3	1.12	58 7.4	1.05	2 54.0	2.22	3.1
15	15 55.4	15 58.5	58 19.6	0.99	58 31.1	0.92	3 45.9	2.11	4.1
16	16 1.4	16 4.0	58 41.7	+0.85	58 51.5	+0.78	4 35.4	2.02	5.1
17	16 6.4	16 8.6	59 0.3	0.70	59 8.2	0.61	5 23.3	1.98	6.1
18	16 10.4	16 12.0	59 15.0	0.52	59 20.7	0.42	6 10.9	2.00	7.1
19	16 13.2	16 14.0	59 25.0	+0.30	59 28.0	+0.18	6 59.6	2.07	8.1
20	16 14.4	16 14.2	59 29.4	+0.04	59 29.0	−0.11	7 50.8	2.20	9.1
21	16 13.6	16 12.5	59 26.7	−0.27	59 22.5	0.44	8 45.3	2.35	10.1
22	16 10.7	16 8.4	59 16.1	−0.62	59 7.6	−0.80	9 43.6	2.49	11.1
23	16 5.5	16 2.0	58 56.9	0.98	58 44.1	1.15	10 44.5	2.56	12.1
24	15 58.0	15 53.6	58 29.4	1.30	58 13.0	1.43	11 45.8	2.53	13.1
25	15 48.7	15 43.5	57 55.1	−1.54	57 36.0	−1.63	12 44.9	2.39	14.1
26	15 38.0	15 32.5	57 16.0	1.68	56 55.6	1.70	13 39.9	2.19	15.1
27	15 26.9	15 21.4	56 35.1	1.70	56 14.9	1.66	14 30.1	2.00	16.1
28	15 16.1	15 11.0	55 55.3	−1.59	55 36.7	−1.50	15 16.0	1.83	17.1
29	15 6.3	15 2.0	55 19.4	1.38	55 3.7	1.23	15 58.5	1.72	18.1
30	14 58.3	14 55.1	54 49.9	1.06	54 38.2	0.88	16 38.8	1.65	19.1
1	14 52.5	14 50.6	54 28.8	−0.69	54 21.7	−0.48	17 18.2	1.64	20.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 34 14.76	1.9566	S. 15 4 39.9	12.438
1	21 36 11.98	1.9508	14 52 12.1	12.488
2	21 38 8.86	1.9452	14 39 41.3	12.537
3	21 40 5.41	1.9396	14 27 7.7	12.584
4	21 42 1.62	1.9341	14 14 31.2	12.631
5	21 43 57.50	1.9287	14 1 51.9	12.678
6	21 45 53.06	1.9234	13 49 9.8	12.723
7	21 47 48.30	1.9181	13 36 25.1	12.767
8	21 49 43.23	1.9128	13 23 37.8	12.809
9	21 51 37.84	1.9077	13 10 48.0	12.851
10	21 53 32.15	1.9027	12 57 55.7	12.892
11	21 55 26.16	1.8977	12 45 1.0	12.932
12	21 57 19.87	1.8928	12 32 3.9	12.971
13	21 59 13.29	1.8880	12 19 4.5	13.008
14	22 1 6.43	1.8833	12 6 2.9	13.045
15	22 2 59.29	1.8787	11 52 59.1	13.081
16	22 4 51.87	1.8741	11 39 53.2	13.116
17	22 6 44.18	1.8695	11 26 45.2	13.150
18	22 8 36.21	1.8650	11 13 35.2	13.183
19	22 10 27.98	1.8608	11 0 23.2	13.216
20	22 12 19.50	1.8566	10 47 9.3	13.247
21	22 14 10.77	1.8524	10 33 53.6	13.277
22	22 16 1.79	1.8482	10 20 36.1	13.307
23	22 17 52.56	1.8442	S. 10 7 16.8	13.337

TUESDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 19 43.10	1.8404	S. 9 53 55.7	13.365
1	22 21 33.41	1.8366	9 40 33.0	13.391
2	22 23 23.49	1.8328	9 27 8.8	13.417
3	22 25 13.34	1.8290	9 13 43.0	13.443
4	22 27 2.97	1.8254	9 0 15.7	13.468
5	22 28 52.39	1.8219	8 46 46.9	13.492
6	22 30 41.60	1.8184	8 33 16.7	13.514
7	22 32 30.60	1.8151	8 19 45.2	13.536
8	22 34 19.41	1.8118	8 6 12.4	13.557
9	22 36 8.02	1.8086	7 52 38.3	13.578
10	22 37 56.44	1.8055	7 39 3.0	13.598
11	22 39 44.68	1.8025	7 25 26.5	13.617
12	22 41 32.74	1.7995	7 11 48.9	13.636
13	22 43 20.62	1.7966	6 58 10.2	13.653
14	22 45 8.33	1.7938	6 44 30.5	13.670
15	22 46 55.88	1.7911	6 30 49.8	13.686
16	22 48 43.27	1.7885	6 17 8.2	13.701
17	22 50 30.50	1.7859	6 3 25.7	13.716
18	22 52 17.58	1.7834	5 49 42.3	13.730
19	22 54 4.51	1.7811	5 35 58.1	13.743
20	22 55 51.31	1.7788	5 22 13.2	13.755
21	22 57 37.97	1.7765	5 8 27.5	13.767
22	22 59 24.49	1.7743	4 54 41.2	13.778
23	23 1 10.89	1.7723	4 40 54.2	13.788
24	23 2 57.17	1.7703	S. 4 27 6.6	13.797

WEDNESDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 2 57.17	1.7703	S. 4 27 6.6	13.797
1	23 4 43.33	1.7684	4 13 18.5	13.806
2	23 6 29.38	1.7666	3 59 29.9	13.815
3	23 8 15.32	1.7648	3 45 40.7	13.823
4	23 10 1.16	1.7632	3 31 51.1	13.830
5	23 11 46.90	1.7616	3 18 1.1	13.836
6	23 13 32.55	1.7601	3 4 10.8	13.841
7	23 15 18.11	1.7586	2 50 20.2	13.846
8	23 17 3.59	1.7572	2 36 29.3	13.851
9	23 18 48.98	1.7559	2 22 38.1	13.855
10	23 20 34.30	1.7548	2 8 46.7	13.857
11	23 22 19.56	1.7537	1 54 55.2	13.859
12	23 24 4.75	1.7527	1 41 3.6	13.861
13	23 25 49.88	1.7517	1 27 11.9	13.862
14	23 27 34.96	1.7508	1 13 20.2	13.863
15	23 29 19.98	1.7500	0 59 28.4	13.863
16	23 31 4.96	1.7493	0 45 36.7	13.861
17	23 32 49.90	1.7487	0 31 45.1	13.859
18	23 34 34.81	1.7481	0 17 53.6	13.857
19	23 36 19.68	1.7476	S. 0 4 2.2	13.854
20	23 38 4.52	1.7473	N. 0 9 48.9	13.850
21	23 39 49.35	1.7470	0 23 39.8	13.846
22	23 41 34.16	1.7467	0 37 30.4	13.841
23	23 43 18.96	1.7465	N. 0 51 20.7	13.836

THURSDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 45 3.74	1.7463	N. 1 5 10.7	13.830
1	23 46 48.52	1.7464	1 19 0.3	13.823
2	23 48 33.31	1.7465	1 32 49.5	13.815
3	23 50 18.10	1.7466	1 46 38.2	13.807
4	23 52 2.90	1.7468	2 0 26.4	13.799
5	23 53 47.72	1.7472	2 14 14.1	13.790
6	23 55 32.56	1.7475	2 28 1.2	13.780
7	23 57 17.42	1.7479	2 41 47.7	13.769
8	23 59 2.31	1.7485	2 55 33.5	13.758
9	0 0 47.24	1.7491	3 9 18.7	13.746
10	0 2 32.20	1.7497	3 23 3.1	13.733
11	0 4 17.20	1.7505	3 36 46.7	13.721
12	0 6 2.26	1.7514	3 50 29.6	13.707
13	0 7 47.37	1.7523	4 4 11.6	13.692
14	0 9 32.53	1.7532	4 17 52.7	13.677
15	0 11 17.75	1.7542	4 31 32.9	13.662
16	0 13 3.04	1.7554	4 45 12.1	13.645
17	0 14 48.40	1.7567	4 58 50.3	13.628
18	0 16 33.84	1.7580	5 12 27.5	13.611
19	0 18 19.36	1.7593	5 26 3.6	13.592
20	0 20 4.96	1.7607	5 39 38.6	13.573
21	0 21 50.64	1.7622	5 53 12.4	13.553
22	0 23 36.42	1.7638	6 6 45.0	13.533
23	0 25 22.30	1.7655	6 20 16.3	13.512
24	0 27 8.28	1.7672	N. 6 33 46.4	13.490

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 27 8.28	1.7672	N. 6 33 46.4	13.490
1	0 28 54.36	1.7690	6 47 15.1	13.467
2	0 30 40.56	1.7709	7 0 42.5	13.445
3	0 32 26.87	1.7728	7 14 8.5	13.422
4	0 34 13.30	1.7749	7 27 33.1	13.397
5	0 35 59.86	1.7770	7 40 56.1	13.371
6	0 37 46.54	1.7791	7 54 17.6	13.346
7	0 39 33.35	1.7813	8 7 37.6	13.319
8	0 41 20.30	1.7837	8 20 55.9	13.292
9	0 43 7.40	1.7862	8 34 12.6	13.264
10	0 44 54.64	1.7886	8 47 27.6	13.235
11	0 46 42.03	1.7911	9 0 40.8	13.205
12	0 48 29.58	1.7937	9 13 52.2	13.175
13	0 50 17.28	1.7964	9 27 1.8	13.144
14	0 52 5.14	1.7992	9 40 9.5	13.112
15	0 53 53.18	1.8021	9 53 15.3	13.080
16	0 55 41.39	1.8049	10 6 19.1	13.047
17	0 57 29.77	1.8078	10 19 20.9	13.013
18	0 59 18.33	1.8109	10 32 20.7	12.979
19	1 1 7.08	1.8141	10 45 18.4	12.943
20	1 2 56.02	1.8172	10 58 13.9	12.907
21	1 4 45.14	1.8204	11 11 7.2	12.870
22	1 6 34.46	1.8237	11 23 58.3	12.832
23	1 8 23.98	1.8271	N. 11 36 47.0	12.793

SATURDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 10 13.71	1.8305	N. 11 49 33.4	12.754
1	1 12 3.64	1.8340	12 2 17.5	12.714
2	1 13 53.79	1.8377	12 14 59.1	12.673
3	1 15 44.16	1.8413	12 27 38.2	12.631
4	1 17 34.75	1.8450	12 40 14.8	12.588
5	1 19 25.56	1.8488	12 52 48.8	12.544
6	1 21 16.61	1.8527	13 5 20.1	12.500
7	1 23 7.89	1.8567	13 17 48.8	12.456
8	1 24 59.41	1.8606	13 30 14.8	12.409
9	1 26 51.16	1.8647	13 42 37.9	12.362
10	1 28 43.16	1.8688	13 54 58.2	12.314
11	1 30 35.41	1.8729	14 7 15.6	12.266
12	1 32 27.91	1.8771	14 19 30.1	12.217
13	1 34 20.66	1.8814	14 31 41.6	12.166
14	1 36 13.68	1.8858	14 43 50.0	12.114
15	1 38 6.96	1.8902	14 55 55.3	12.062
16	1 40 0.51	1.8947	15 7 57.4	12.009
17	1 41 54.33	1.8992	15 19 56.4	11.956
18	1 43 48.42	1.9038	15 31 52.1	11.901
19	1 45 42.79	1.9085	15 43 44.5	11.845
20	1 47 37.44	1.9132	15 55 33.5	11.787
21	1 49 32.38	1.9180	16 7 19.0	11.729
22	1 51 27.60	1.9228	16 19 1.0	11.671
23	1 53 23.12	1.9277	16 30 39.5	11.611
24	1 55 18.93	1.9327	N. 16 42 14.3	11.550

SUNDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 55 18.93	1.9327	N. 16 42 14.3	11.550
1	1 57 15.04	1.9377	16 53 45.5	11.489
2	1 59 11.45	1.9427	17 5 13.0	11.426
3	2 1 8.16	1.9478	17 16 36.6	11.362
4	2 3 5.18	1.9530	17 27 56.4	11.297
5	2 5 2.52	1.9582	17 39 12.3	11.232
6	2 7 0.17	1.9635	17 50 24.2	11.165
7	2 8 58.14	1.9688	18 1 32.1	11.097
8	2 10 56.43	1.9741	18 12 35.9	11.028
9	2 12 55.03	1.9794	18 23 35.5	10.958
10	2 14 53.96	1.9849	18 34 30.9	10.887
11	2 16 53.22	1.9904	18 45 22.0	10.816
12	2 18 52.81	1.9959	18 56 8.8	10.743
13	2 20 52.73	2.0015	19 6 51.2	10.669
14	2 22 52.99	2.0072	19 17 29.1	10.593
15	2 24 53.59	2.0128	19 28 2.4	10.517
16	2 26 54.53	2.0185	19 38 31.1	10.440
17	2 28 55.81	2.0242	19 48 55.2	10.362
18	2 30 57.43	2.0299	19 59 14.5	10.282
19	2 32 59.40	2.0357	20 9 29.0	10.201
20	2 35 1.72	2.0416	20 19 38.6	10.119
21	2 37 4.39	2.0474	20 29 43.3	10.037
22	2 39 7.41	2.0533	20 39 43.0	9.953
23	2 41 10.79	2.0593	N. 20 49 37.6	9.868

MONDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 43 14.53	2.0653	N. 20 59 27.1	9.782
1	2 45 18.63	2.0712	21 9 11.4	9.694
2	2 47 23.08	2.0772	21 18 50.4	9.605
3	2 49 27.89	2.0832	21 28 24.0	9.515
4	2 51 33.06	2.0892	21 37 52.2	9.424
5	2 53 38.60	2.0953	21 47 14.9	9.332
6	2 55 44.50	2.1013	21 56 32.1	9.239
7	2 57 50.76	2.1074	22 5 43.6	9.145
8	2 59 57.39	2.1136	22 14 49.5	9.050
9	3 2 4.39	2.1197	22 23 49.6	8.952
10	3 4 11.76	2.1258	22 32 43.8	8.854
11	3 6 19.49	2.1319	22 41 32.1	8.756
12	3 8 27.59	2.1381	22 50 14.5	8.656
13	3 10 36.06	2.1442	22 58 50.8	8.554
14	3 12 44.90	2.1504	23 7 21.0	8.452
15	3 14 54.11	2.1566	23 15 45.0	8.347
16	3 17 3.69	2.1627	23 24 2.7	8.242
17	3 19 13.63	2.1688	23 32 14.1	8.136
18	3 21 23.94	2.1749	23 40 19.0	8.028
19	3 23 34.62	2.1811	23 48 17.5	7.920
20	3 25 45.67	2.1872	23 56 9.4	7.810
21	3 27 57.08	2.1933	24 3 54.7	7.699
22	3 30 8.86	2.1994	24 11 33.3	7.587
23	3 32 21.01	2.2055	24 19 5.1	7.473
24	3 34 33.52	2.2115	N. 24 26 30.1	7.359

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 9.					**THURSDAY 11.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 34 33.52	2.2115	N 24 26 30.1	7.359	0	5 26 46.14	2.4343	N.27 46 50.7	0.623
1	3 36 46.39	2.2175	24 33 48.2	7.243	1	5 29 12.27	2.4367	27 47 23.3	0.463
2	3 38 59.62	2.2236	24 40 59.3	7.126	2	5 31 38.54	2.4388	27 47 46.3	0.302
3	3 41 13.22	2.2297	24 48 3.3	7.008	3	5 34 4.93	2.4408	27 47 59.6	+ 0.142
4	3 43 27.18	2.2356	24 55 0.2	6.889	4	5 36 31.44	2.4428	27 48 3.3	− 0.019
5	3 45 41.49	2.2414	25 1 50.0	6.769	5	5 38 58.07	2.4447	27 47 57.3	0.182
6	3 47 56.15	2.2473	25 8 32.5	6.647	6	5 41 24.81	2.4465	27 47 41.5	0.344
7	3 50 11.17	2.2532	25 15 7.6	6.524	7	5 43 51.65	2.4481	27 47 16.0	0.506
8	3 52 26.54	2.2591	25 21 35.3	6.400	8	5 46 18.58	2.4496	27 46 40.8	0.668
9	3 54 42.26	2.2648	25 27 55.6	6.275	9	5 48 45.59	2.4508	27 45 55.8	0.831
10	3 56 58.32	2.2705	25 34 8.3	6.149	10	5 51 12.68	2.4521	27 45 1.0	0.995
11	3 59 14.72	2.2762	25 40 13.4	6.022	11	5 53 39.84	2.4532	27 43 56.4	1.158
12	4 1 31.47	2.2819	25 46 10.9	5.893	12	5 56 7.06	2.4541	27 42 42.0	1.322
13	4 3 48.55	2.2875	25 52 0.6	5.763	13	5 58 34.33	2.4549	27 41 17.8	1.486
14	4 6 5.97	2.2931	25 57 42.5	5.632	14	6 1 1.65	2.4557	27 39 43.7	1.650
15	4 8 23.72	2.2986	26 3 16.5	5.500	15	6 3 29.01	2.4562	27 37 59.8	1.813
16	4 10 41.80	2.3040	26 8 42.5	5.367	16	6 5 56.39	2.4566	27 36 6.1	1.977
17	4 13 0.20	2.3094	26 14 0.6	5.234	17	6 8 23.80	2.4570	27 34 2.5	2.142
18	4 15 18.93	2.3148	26 19 10.6	5.098	18	6 10 51.23	2.4572	27 31 49.1	2.306
19	4 17 37.98	2.3200	26 24 12.4	4.962	19	6 13 18.67	2.4573	27 29 25.8	2.470
20	4 19 57.33	2.3251	26 29 6.1	4.826	20	6 15 46.11	2.4572	27 26 52.7	2.633
21	4 22 16.99	2.3302	26 33 51.5	4.687	21	6 18 13.53	2.4569	27 24 9.8	2.797
22	4 24 36.96	2.3353	26 38 28.6	4.548	22	6 20 40.94	2.4566	27 21 17.0	2.961
23	4 26 57.23	2.3403	N.26 42 57.3	4.407	23	6 23 8.33	2.4562	N.27 18 14.4	3.125
WEDNESDAY 10.					**FRIDAY 12.**				
0	4 29 17.80	2.3452	N.26 47 17.5	4.266	0	6 25 35.69	2.4557	N.27 15 2.0	3.289
1	4 31 38.66	2.3500	26 51 29.2	4.124	1	6 28 3.01	2.4550	27 11 39.7	3.452
2	4 33 59.81	2.3547	26 55 32.4	3.981	2	6 30 30.29	2.4542	27 8 7.7	3.615
3	4 36 21.23	2.3593	26 59 26.9	3.837	3	6 32 57.52	2.4533	27 4 25.9	3.778
4	4 38 42.93	2.3639	27 3 12.8	3.692	4	6 35 24.69	2.4522	27 0 34.3	3.941
5	4 41 4.90	2.3684	27 6 50.0	3.546	5	6 37 51.79	2.4511	26 56 33.0	4.103
6	4 43 27.14	2.3728	27 10 18.3	3.398	6	6 40 18.82	2.4498	26 52 21.9	4.266
7	4 45 49.64	2.3772	27 13 37.8	3.251	7	6 42 45.77	2.4485	26 48 1.1	4.427
8	4 48 12.40	2.3813	27 16 48.4	3.102	8	6 45 12.64	2.4470	26 43 30.6	4.588
9	4 50 35.40	2.3853	27 19 50.1	2.953	9	6 47 39.41	2.4455	26 38 50.5	4.749
10	4 52 58.64	2.3895	27 22 42.8	2.802	10	6 50 6.08	2.4438	26 34 0.7	4.910
11	4 55 22.12	2.3933	27 25 26.4	2.651	11	6 52 32.65	2.4421	26 29 1.3	5.069
12	4 57 45.84	2.3972	27 28 0.9	2.499	12	6 54 59.10	2.4396	26 23 52.4	5.228
13	5 0 9.76	2.4008	27 30 26.3	2.347	13	6 57 25.43	2.4378	26 18 33.9	5.388
14	5 2 33.94	2.4044	27 32 42.5	2.195	14	6 59 51.64	2.4357	26 13 5.9	5.547
15	5 4 58.33	2.4079	27 34 49.5	2.042	15	7 2 17.72	2.4335	26 7 28.3	5.705
16	5 7 22.69	2.4113	27 36 47.2	1.884	16	7 4 43.66	2.4312	26 1 41.3	5.862
17	5 9 47.67	2.4147	27 38 35.6	1.729	17	7 7 9.46	2.4287	25 55 44.9	6.018
18	5 12 12.64	2.4179	27 40 14.7	1.573	18	7 9 35.10	2.4261	25 49 39.2	6.173
19	5 14 37.80	2.4210	27 41 44.4	1.418	19	7 12 0.59	2.4235	25 43 24.1	6.329
20	5 17 3.14	2.4240	27 43 4.6	1.258	20	7 14 25.92	2.4208	25 36 59.7	6.483
21	5 19 28.65	2.4268	27 44 15.4	1.102	21	7 16 51.09	2.4181	25 30 26.1	6.637
22	5 21 54.32	2.4296	27 45 16.7	0.946	22	7 19 16.09	2.4152	25 23 43.3	6.790
23	5 24 20.18	2.4318	27 46 8.5	0.785	23	7 21 40.91	2.4122	25 16 51.3	6.943
24	5 26 46.14	2.4343	N.27 46 50.7	0.623	24	7 24 5.55	2.4091	N.25 9 50.1	7.095

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 13.					MONDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 24 5.55	2.4091	N.25 9 50.1	7.095	0	9 15 15.62	2.2154	N.16 53 41.8	13.130
1	7 26 30.00	2.4059	25 2 39.9	7.245	1	9 17 28.42	2.2114	16 40 31.1	13.226
2	7 28 54.26	2.4027	24 55 20.7	7.395	2	9 19 40.99	2.2075	16 27 14.7	13.320
3	7 31 18.33	2.3995	24 47 52.5	7.545	3	9 21 53.32	2.2035	16 13 52.7	13.412
4	7 33 42.20	2.3961	24 40 15.3	7.693	4	9 24 5.41	2.1996	16 0 25.2	13.503
5	7 36 5.86	2.3927	24 32 29.3	7.840	5	9 26 17.27	2.1957	15 46 52.3	13.593
6	7 38 29.32	2.3892	24 24 34.5	7.987	6	9 28 28.89	2.1918	15 33 14.0	13.682
7	7 40 52.57	2.3857	24 16 30.9	8.132	7	9 30 40.28	2.1880	15 19 30.4	13.770
8	7 43 15.60	2.3820	24 8 18.6	8.277	8	9 32 51.45	2.1843	15 5 41.6	13.856
9	7 45 38.41	2.3783	23 59 57.7	8.420	9	9 35 2.40	2.1807	14 51 47.7	13.940
10	7 48 1.00	2.3746	23 51 28.2	8.563	10	9 37 13.13	2.1770	14 37 48.8	14.023
11	7 50 23.36	2.3708	23 42 50.1	8.705	11	9 39 23.64	2.1733	14 23 44.9	14.105
12	7 52 45.49	2.3669	23 34 3.6	8.845	12	9 41 33.93	2.1697	14 9 36.2	14.185
13	7 55 7.39	2.3631	23 25 8.7	8.985	13	9 43 44.01	2.1662	13 55 22.7	14.264
14	7 57 29.06	2.3592	23 16 5.4	9.124	14	9 45 53.88	2.1628	13 41 4.5	14.342
15	7 59 50.49	2.3552	23 6 53.8	9.262	15	9 48 3.55	2.1595	13 26 41.6	14.419
16	8 2 11.68	2.3512	22 57 34.0	9.398	16	9 50 13.02	2.1562	13 12 14.2	14.494
17	8 4 32.63	2.3471	22 48 6.1	9.533	17	9 52 22.29	2.1528	12 57 42.3	14.567
18	8 6 53.33	2.3429	22 38 30.1	9.668	18	9 54 31.36	2.1496	12 43 6.1	14.639
19	8 9 13.78	2.3388	22 28 46.0	9.801	19	9 56 40.24	2.1465	12 28 25.6	14.711
20	8 11 33.99	2.3347	22 18 54.0	9.932	20	9 58 48.94	2.1434	12 13 40.8	14.781
21	8 13 53.95	2.3305	22 8 54.1	10.063	21	10 0 57.45	2.1403	11 58 51.9	14.848
22	8 16 13.65	2.3263	21 58 46.4	10.193	22	10 3 5.78	2.1373	11 43 59.0	14.915
23	8 18 33.10	2.3221	N.21 48 31.0	10.322	23	10 5 13.93	2.1344	N.12 29 2.1	14.981
	SUNDAY 14.					TUESDAY 16.			
0	8 20 52.30	2.3178	N.21 38 7.8	10.450	0	10 7 21.91	2.1316	N.11 14 1.3	15.045
1	8 23 11.24	2.3135	21 27 37.0	10.576	1	10 9 29.72	2.1288	10 58 56.7	15.107
2	8 25 29.92	2.3093	21 16 58.7	10.700	2	10 11 37.37	2.1262	10 43 48.4	15.168
3	8 27 48.35	2.3050	21 6 13.0	10.823	3	10 13 44.86	2.1235	10 28 36.5	15.228
4	8 30 6.52	2.3006	20 55 19.9	10.946	4	10 15 52.19	2.1209	10 13 21.0	15.287
5	8 32 24.42	2.2963	20 44 19.4	11.068	5	10 17 59.37	2.1185	9 58 2.0	15.345
6	8 34 42.07	2.2920	20 33 11.7	11.188	6	10 20 6.41	2.1161	9 42 39.6	15.401
7	8 36 59.46	2.2877	20 21 56.9	11.307	7	10 22 13.30	2.1137	9 27 13.9	15.455
8	8 39 16.59	2.2833	20 10 34.9	11.425	8	10 24 20.05	2.1114	9 11 45.0	15.508
9	8 41 33.46	2.2789	19 59 5.9	11.541	9	10 26 26.67	2.1093	8 56 12.9	15.560
10	8 43 50.06	2.2746	19 47 30.0	11.655	10	10 28 33.16	2.1072	8 40 37.8	15.610
11	8 46 6.41	2.2703	19 35 47.3	11.769	11	10 30 39.53	2.1051	8 24 59.7	15.659
12	8 48 22.50	2.2660	19 23 57.7	11.882	12	10 32 45.77	2.1931	8 9 18.7	15.707
13	8 50 38.33	2.2617	19 12 1.4	11.993	13	10 34 51.90	2.1012	7 53 34.9	15.753
14	8 52 53.90	2.2573	18 59 58.5	12.102	14	10 36 57.92	2.0994	7 37 48.3	15.798
15	8 55 9.21	2.2531	18 47 49.1	12.211	15	10 39 3.83	2.0977	7 21 59.1	15.841
16	8 57 24.27	2.2488	18 35 33.2	12.319	16	10 41 9.64	2.0960	7 6 7.4	15.883
17	8 59 39.07	2.2445	18 23 10.8	12.426	17	10 43 15.35	2.0944	6 50 13.1	15.925
8	9 1 53.61	2.2403	18 10 42.1	12.530	18	10 45 20.97	2.0929	6 34 16.4	15.964
9	9 4 7.90	2.2361	17 58 7.2	12.633	19	10 47 26.50	2.0915	6 18 17.4	16.002
0	9 6 21.94	2.2319	17 45 26.2	12.735	20	10 49 31.95	2.0903	6 2 16.2	16.038
1	9 8 35.73	2.2278	17 32 39.0	12.837	21	10 51 37.33	2.0891	5 46 12.8	16.073
2	9 10 49.27	2.2237	17 19 45.8	12.936	22	10 53 42.64	2.0879	5 30 7.4	16.108
3	9 13 2.57	2.2196	17 6 46.7	13.033	23	10 55 47.87	2.0867	5 13 59.9	16.141
4	9 15 15.62	2.2154	N.16 53 41.8	13.130	24	10 57 53.04	2.0858	N. 4 57 50.5	16.172

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 17.					FRIDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 57 53.04	2.0858	N. 4 57 50.5	16.172	0	12 38 31.67	2.1420	S. 8 7 41.2	16.006
1	10 59 58.16	2.0849	4 41 39.3	16.202	1	12 40 40.29	2.1453	8 23 40.4	15.966
2	11 2 3.23	2.0840	4 25 26.3	16.230	2	12 42 49.11	2.1487	8 39 37.1	15.924
3	11 4 8.24	2.0832	4 9 11.7	16.257	3	12 44 58.14	2.1522	8 55 31.3	15.882
4	11 6 13.21	2.0826	3 52 55.5	16.283	4	12 47 7.38	2.1558	9 11 22.9	15.838
5	11 8 18.15	2.0821	3 36 37.8	16.307	5	12 49 16.84	2.1595	9 27 11.8	15.792
6	11 10 23.06	2.0816	3 20 18.7	16.329	6	12 51 26.52	2.1633	9 42 57.9	15.744
7	11 12 27.94	2.0812	3 3 58.3	16.351	7	12 53 36.43	2.1671	9 58 41.1	15.695
8	11 14 32.80	2.0809	2 47 36.6	16.372	8	12 55 46.57	2.1709	10 14 21.3	15.644
9	11 16 37.65	2.0807	2 31 13.7	16.390	9	12 57 56.94	2.1748	10 29 58.4	15.592
10	11 18 42.49	2.0806	2 14 49.8	16.407	10	13 0 7.55	2.1789	10 45 32.3	15.538
11	11 20 47.32	2.0805	1 58 24.9	16.423	11	13 2 18.41	2.1831	11 1 3.0	15.483
12	11 22 52.15	2.0806	1 41 59.0	16.438	12	13 4 29.52	2.1873	11 16 30.3	15.426
13	11 24 56.99	2.0807	1 25 32.3	16.451	13	13 6 40.89	2.1916	11 31 54.1	15.367
14	11 27 1.84	2.0809	1 9 4.9	16.462	14	13 8 52.51	2.1959	11 47 14.4	15.307
15	11 29 6.70	2.0812	0 52 36.8	16.473	15	13 11 4.39	2.2003	12 2 31.0	15.245
16	11 31 11.59	2.0816	0 36 8.1	16.482	16	13 13 16.54	2.2048	12 17 43.8	15.181
17	11 33 16.50	2.0821	0 19 38.9	16.490	17	13 15 28.97	2.2094	12 32 52.7	15.116
18	11 35 21.44	2.0827	N. 0 3 9.3	16.496	18	13 17 41.67	2.2140	12 47 57.7	15.049
19	11 37 26.42	2.0834	S. 0 13 20.6	16.501	19	13 19 54.65	2.2187	13 2 58.6	14.980
20	11 39 31.45	2.0842	0 29 50.8	16.504	20	13 22 7.92	2.2235	13 17 55.3	14.910
21	11 41 36.52	2.0850	0 46 21.1	16.506	21	13 24 21.47	2.2283	13 32 47.8	14.838
22	11 43 41.65	2.0860	1 2 51.5	16.507	22	13 26 35.31	2.2332	13 47 35.9	14.765
23	11 45 46.84	2.0870	S. 1 19 21.9	16.505	23	13 28 49.45	2.2382	S. 14 2 19.6	14.690
	THURSDAY 18.					SATURDAY 20.			
0	11 47 52.09	2.0882	S. 1 35 52.1	16.502	0	13 31 3.89	2.2432	S. 14 16 58.7	14.613
1	11 49 57.42	2.0894	1 52 22.2	16.499	1	13 33 18.63	2.2482	14 31 33.2	14.535
2	11 52 2.82	2.0907	2 8 52.0	16.494	2	13 35 33.68	2.2533	14 46 2.9	14.454
3	11 54 8.30	2.0921	2 25 21.5	16.487	3	13 37 49.03	2.2585	15 0 27.7	14.372
4	11 56 13.87	2.0936	2 41 50.5	16.479	4	13 40 4.70	2.2638	15 14 47.5	14.288
5	11 58 19.53	2.0951	2 58 19.0	16.469	5	13 42 20.69	2.2691	15 29 2.3	14.203
6	12 0 25.28	2.0968	3 14 46.8	16.458	6	13 44 36.99	2.2744	15 43 11.9	14.116
7	12 2 31.14	2.0986	3 31 13.9	16.446	7	13 46 53.62	2.2798	15 57 16.2	14.027
8	12 4 37.11	2.1004	3 47 40.3	16.432	8	13 49 10.57	2.2852	16 11 15.2	13.937
9	12 6 43.19	2.1023	4 4 5.8	16.417	9	13 51 27.84	2.2906	16 25 8.7	13.845
10	12 8 49.39	2.1044	4 20 30.3	16.399	10	13 53 45.44	2.2962	16 38 56.6	13.751
11	12 10 55.72	2.1065	4 36 53.7	16.381	11	13 56 3.38	2.3017	16 52 38.8	13.656
12	12 13 2.17	2.1087	4 53 16.0	16.362	12	13 58 21.65	2.3073	17 6 15.3	13.559
13	12 15 8.76	2.1110	5 9 37.1	16.340	13	14 0 40.26	2.3130	17 19 45.9	13.460
14	12 17 15.49	2.1134	5 25 56.8	16.317	14	14 2 59.21	2.3187	17 33 10.5	13.359
15	12 19 22.37	2.1159	5 42 15.1	16.292	15	14 5 18.50	2.3243	17 46 29.0	13.257
16	12 21 29.40	2.1184	5 58 31.9	16.267	16	14 7 38.13	2.3301	17 59 41.3	13.153
17	12 23 36.58	2.1210	6 14 47.1	16.239	17	14 9 58.11	2.3358	18 12 47.3	13.047
18	12 25 43.92	2.1238	6 31 0.6	16.210	18	14 12 18.43	2.3416	18 25 46.9	12.939
19	12 27 51.43	2.1267	6 47 12.3	16.180	19	14 14 39.10	2.3474	18 38 40.0	12.830
20	12 29 59.12	2.1296	7 3 22.2	16.148	20	14 17 0.12	2.3532	18 51 26.5	12.719
21	12 32 6.98	2.1325	7 19 30.1	16.115	21	14 19 21.49	2.3591	19 4 6.3	12.607
22	12 34 15.02	2.1356	7 35 36.0	16.080	22	14 21 43.21	2.3649	19 16 39.3	12.493
23	12 36 23.25	2.1387	7 51 39.7	16.043	23	14 24 5.28	2.3708	19 29 5.4	12.377
24	12 38 31.67	2.1420	S. 8 7 41.2	16.006	24	14 26 27.70	2.3767	S. 19 41 24.5	12.259

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 21.					**TUESDAY 23.**			
h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
4 26 27.70	2.3767	S.19 41 24.5	12.259	0	16 26 43.05	2.6062	S.26 44 42.1	4.864
4 28 50.48	2.3826	19 53 36.5	12.140	1	16 29 19.49	2.6085	26 49 28.5	4.682
4 31 13.61	2.3884	20 5 41.3	12.018	2	16 31 56.07	2.6107	26 54 4.0	4.500
4 33 37.09	2.3943	20 17 38.7	11.895	3	16 34 32.78	2.6128	26 58 28.5	4.317
4 36 0.92	2.4002	20 29 28.7	11.772	4	16 37 9.61	2.6147	27 2 42.0	4.133
4 38 25.11	2.4061	20 41 11.3	11.646	5	16 39 46.54	2.6163	27 6 44.5	3.949
4 40 49.65	2.4119	20 52 46.2	11.518	6	16 42 23.57	2.6179	27 10 35.9	3.765
4 43 14.54	2.4177	21 4 13.4	11.388	7	16 45 0.69	2.6193	27 14 16.3	3.580
4 45 39.78	2.4236	21 15 32.8	11.257	8	16 47 37.89	2.6206	27 17 45.5	3.394
4 48 5.37	2.4294	21 26 44.2	11.124	9	16 50 15.16	2.6217	27 21 3.6	3.209
4 50 31.31	2.4352	21 37 47.6	10.990	10	16 52 52.49	2.6226	27 24 10.6	3.023
4 52 57.60	2.4410	21 48 43.0	10.855	11	16 55 29.87	2.6233	27 27 6.4	2.837
4 55 24.23	2.4467	21 59 30.2	10.717	12	16 58 7.29	2.6239	27 29 51.0	2.650
4 57 51.20	2.4524	22 10 9.1	10.578	13	17 0 44.74	2.6243	27 32 24.4	2.463
5 0 18.52	2.4582	22 20 39.6	10.437	14	17 3 22.21	2.6247	27 34 46.6	2.277
5 2 46.18	2.4638	22 31 1.6	10.295	15	17 5 59.70	2.6248	27 36 57.7	2.091
5 5 14.18	2.4694	22 41 15.0	10.152	16	17 8 37.19	2.6247	27 38 57.6	1.904
5 7 42.51	2.4749	22 51 19.8	10.007	17	17 11 14.66	2.6243	27 40 46.2	1.717
5 10 11.17	2.4804	23 1 15.8	9.860	18	17 13 52.11	2.6239	27 42 23.6	1.530
5 12 40.16	2.4859	23 11 3.0	9.712	19	17 16 29.53	2.6233	27 43 49.8	1.343
5 15 9.48	2.4913	23 20 41.3	9.562	20	17 19 6.91	2.6226	27 45 4.8	1.157
5 17 39.12	2.4967	23 30 10.5	9.411	21	17 21 44.24	2.6217	27 46 8.6	0.970
5 20 9.08	2.5019	23 39 30.6	9.258	22	17 24 21.51	2.6206	27 47 1.2	0.783
5 22 39.35	2.5071	S.23 48 41.5	9.104	23	17 26 58.71	2.6193	S.27 47 42.6	0.597
MONDAY 22.					**WEDNESDAY 24.**			
5 25 9.93	2.5122	S.23 57 43.1	8.948	0	17 29 35.82	2.6178	S.27 48 12.9	0.412
5 27 40.82	2.5173	24 6 35.3	8.792	1	17 32 12.84	2.6162	27 48 32.1	0.227
5 30 12.01	2.5223	24 15 18.1	8.634	2	17 34 49.76	2.6143	27 48 40.1	− 0.041
5 32 43.50	2.5273	24 23 51.4	8.475	3	17 37 26.56	2.6123	27 48 37.0	+ 0.144
5 35 15.29	2.5321	24 32 15.1	8.314	4	17 40 3.24	2.6103	27 48 22.8	0.328
5 37 47.36	2.5368	24 40 29.1	8.152	5	17 42 39.79	2.6080	27 47 57.6	0.512
5 40 19.71	2.5415	24 48 33.3	7.988	6	17 45 16.20	2.6055	27 47 21.4	0.695
5 42 52.34	2.5461	24 56 27.6	7.823	7	17 47 52.45	2.6028	27 46 34.2	0.878
5 45 25.24	2.5505	25 4 12.1	7.658	8	17 50 28.54	2.6001	27 45 36.0	1.061
5 47 58.40	2.5549	25 11 46.6	7.492	9	17 53 4.46	2.5972	27 44 26.9	1.242
5 50 31.82	2.5592	25 19 11.1	7.323	10	17 55 40.20	2.5940	27 43 7.0	1.423
5 53 5.50	2.5633	25 26 25.4	7.153	11	17 58 15.74	2.5907	27 41 36.2	1.603
5 55 39.42	2.5673	25 33 29.5	6.982	12	18 0 51.08	2.5872	27 39 54.6	1.782
5 58 13.58	2.5712	25 40 23.3	6.811	13	18 3 26.21	2.5837	27 38 2.3	1.961
6 0 47.97	2.5751	25 47 6.8	6.639	14	18 6 1.12	2.5800	27 35 59.3	2.139
6 3 22.59	2.5788	25 53 40.0	6.466	15	18 8 35.81	2.5762	27 33 45.6	2.317
6 5 57.43	2.5824	26 0 2.7	6.291	16	18 11 10.26	2.5721	27 31 21.3	2.493
6 8 32.48	2.5858	26 6 14.9	6.116	17	18 13 44.46	2.5678	27 28 46.5	2.668
6 11 7.73	2.5892	26 12 16.6	5.940	18	18 16 18.40	2.5635	27 26 1.2	2.842
6 13 43.18	2.5923	26 18 7.7	5.762	19	18 18 52.08	2.5591	27 23 5.5	3.015
6 16 18.81	2.5953	26 23 48.1	5.584	20	18 21 25.49	2.5545	27 19 59.4	3.187
6 18 54.62	2.5983	26 29 17.8	5.405	21	18 23 58.62	2.5497	27 16 43.0	3.358
6 21 30.60	2.6011	26 34 36.7	5.225	22	18 26 31.46	2.5449	27 13 16.4	3.528
6 24 6.75	2.6037	26 39 44.8	5.045	23	18 29 4.01	2.5399	27 9 39.6	3.697
6 26 43.05	2.6062	S.26 44 42.1	4.864	24	18 31 36.25	2.5347	S.27 5 52.7	3.866

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 25.					SATURDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 31 36.25	2.5347	S.27 5 52.7	3.866	0	20 25 43.07	2.2022	S.21 12 48.5	10.267
1	18 34 8.18	2.5295	27 1 55.7	4.033	1	20 27 54.98	2.1947	21 2 29.6	10.362
2	18 36 39.79	2.5241	26 57 48.8	4.198	2	20 30 6.44	2.1872	20 52 5.0	10.456
3	18 39 11.07	2.5186	26 53 32.0	4.363	3	20 32 17.45	2.1798	20 41 34.9	10.548
4	18 41 42.02	2.5130	26 49 5.3	4.526	4	20 34 28.02	2.1725	20 30 59.3	10.639
5	18 44 12.63	2.5072	26 44 28.9	4.687	5	20 36 38.15	2.1652	20 20 18.2	10.730
6	18 46 42.89	2.5014	26 39 42.8	4.848	6	20 38 47.85	2.1580	20 9 31.7	10.818
7	18 49 12.80	2.4955	26 34 47.1	5.007	7	20 40 57.11	2.1507	19 58 40.0	10.904
8	18 51 42.35	2.4895	26 29 41.9	5.166	8	20 43 5.93	2.1434	19 47 43.2	10.989
9	18 54 11.54	2.4834	26 24 27.2	5.323	9	20 45 14.31	2.1361	19 36 41.3	11.073
10	18 56 40.36	2.4771	26 19 3.1	5.478	10	20 47 22.26	2.1290	19 25 34.4	11.156
11	18 59 8.80	2.4707	26 13 29.8	5.632	11	20 49 29.79	2.1220	19 14 22.6	11.236
12	19 1 36.85	2.4643	26 7 47.3	5.784	12	20 51 36.90	2.1149	19 3 6.1	11.314
13	19 4 4.52	2.4579	26 1 55.7	5.936	13	20 53 43.58	2.1078	18 51 44.9	11.392
14	19 6 31.80	2.4513	25 55 55.0	6.086	14	20 55 49.84	2.1008	18 40 19.0	11.470
15	19 8 58.68	2.4447	25 49 45.4	6.234	15	20 57 55.68	2.0939	18 28 48.5	11.545
16	19 11 25.16	2.4379	25 43 26.9	6.381	16	21 0 1.11	2.0870	18 17 13.6	11.618
17	19 13 51.23	2.4311	25 36 59.7	6.526	17	21 2 6.12	2.0801	18 5 34.3	11.691
18	19 16 16.89	2.4242	25 30 23.8	6.670	18	21 4 10.72	2.0733	17 53 50.7	11.762
19	19 18 42.13	2.4173	25 23 39.3	6.813	19	21 6 14.91	2.0666	17 42 2.9	11.831
20	19 21 6.96	2.4103	25 16 46.2	6.954	20	21 8 18.71	2.0600	17 30 11.0	11.899
21	19 23 31.37	2.4032	25 9 44.8	7.093	21	21 10 22.11	2.0534	17 18 15.0	11.966
22	19 25 55.35	2.3961	25 2 35.1	7.231	22	21 12 25.12	2.0468	17 6 15.1	12.031
23	19 28 18.90	2.3890	S.24 55 17.1	7.368	23	21 14 27.73	2.0402	S.16 54 11.3	12.096
	FRIDAY 26.					SUNDAY 28.			
0	19 30 42.03	2.3818	S.24 47 51.0	7.503	0	21 16 29.95	2.0338	S.16 42 3.6	12.159
1	19 33 4.72	2.3745	24 40 16.8	7.636	1	21 18 31.79	2.0275	16 29 52.2	12.221
2	19 35 26.97	2.3672	24 32 34.7	7.767	2	21 20 33.25	2.0211	16 17 37.1	12.281
3	19 37 48.78	2.3598	24 24 44.8	7.897	3	21 22 34.32	2.0148	16 5 18.5	12.339
4	19 40 10.15	2.3525	24 16 47.1	8.026	4	21 24 35.02	2.0087	15 52 56.4	12.397
5	19 42 31.08	2.3451	24 8 41.7	8.153	5	21 26 35.36	2.0026	15 40 30.8	12.454
6	19 44 51.56	2.3376	24 0 28.8	8.278	6	21 28 35.33	1.9965	15 28 1.9	12.509
7	19 47 11.59	2.3302	23 52 8.4	8.402	7	21 30 34.94	1.9905	15 15 29.7	12.563
8	19 49 31.18	2.3227	23 43 40.6	8.525	8	21 32 34.19	1.9845	15 2 54.3	12.617
9	19 51 50.32	2.3152	23 35 5.4	8.646	9	21 34 33.08	1.9786	14 50 15.7	12.668
10	19 54 9.01	2.3077	23 26 23.1	8.764	10	21 36 31.62	1.9728	14 37 34.1	12.718
11	19 56 27.24	2.3001	23 17 33.7	8.882	11	21 38 29.82	1.9671	14 24 49.5	12.768
12	19 58 45.02	2.2926	23 8 37.3	8.997	12	21 40 27.67	1.9614	14 12 1.9	12.817
13	20 1 2.35	2.2851	22 59 34.0	9.112	13	21 42 25.18	1.9558	13 59 11.5	12.863
14	20 3 19.23	2.2775	22 50 23.9	9.225	14	21 44 22.37	1.9504	13 46 18.3	12.909
15	20 5 35.65	2.2699	22 41 7.0	9.337	15	21 46 19.23	1.9449	13 33 22.4	12.954
16	20 7 51.62	2.2623	22 31 43.5	9.446	16	21 48 15.76	1.9395	13 20 23.8	12.997
17	20 10 7.13	2.2547	22 22 13.5	9.553	17	21 50 11.97	1.9343	13 7 22.7	13.039
18	20 12 22.19	2.2472	22 12 37.1	9.660	18	21 52 7.87	1.9291	12 54 19.1	13.080
19	20 14 36.80	2.2397	22 2 54.3	9.765	19	21 54 3.46	1.9239	12 41 13.1	13.121
20	20 16 50.96	2.2322	21 53 5.3	9.868	20	21 55 58.74	1.9188	12 28 4.6	13.161
21	20 19 4.66	2.2246	21 43 10.1	9.971	21	21 57 53.71	1.9137	12 14 53.8	13.199
22	20 21 17.91	2.2171	21 33 8.8	10.071	22	21 59 48.38	1.9088	12 1 40.8	13.236
23	20 23 30.71	2.2097	21 23 1.6	10.169	23	22 1 42.76	1.9040	11 48 25.5	13.272
24	20 25 43.07	2.2022	S.21 12 48.5	10.267	24	22 3 36.86	1.8992	S.11 35 8.1	13.307

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	22	3	36.86	1.8992	S. 11	35	8.1	13.307
1	22	5	30.67	1.8945	11	21	48.7	13.341
2	22	7	24.20	1.8898	11	8	27.2	13.374
3	22	9	17.45	1.8852	10	55	3.8	13.406
4	22	11	10.43	1.8808	10	41	38.5	13.437
5	22	13	3.15	1.8764	10	28	11.3	13.467
6	22	14	55.60	1.8721	10	14	42.4	13.496
7	22	16	47.80	1.8678	10	1	11.8	13.524
8	22	18	39.74	1.8636	9	47	39.5	13.552
9	22	20	31.43	1.8595	9	34	5.6	13.578
10	22	22	22.88	1.8556	9	20	30.2	13.603
11	22	24	14.10	1.8517	9	6	53.2	13.628
12	22	26	5.08	1.8478	8	53	14.8	13.651
13	22	27	55.83	1.8440	8	39	35.1	13.673
14	22	29	46.36	1.8403	8	25	54.0	13.696
15	22	31	36.67	1.8367	8	12	11.6	13.717
16	22	33	26.77	1.8332	7	58	28.0	13.737
17	22	35	16.65	1.8296	7	44	43.2	13.756
18	22	37	6.32	1.8262	7	30	57.3	13.774
19	22	38	55.79	1.8229	7	17	10.3	13.791
20	22	40	45.07	1.8198	7	3	22.3	13.809
21	22	42	34.16	1.8167	6	49	33.4	13.823
22	22	44	23.07	1.8136	6	35	43.5	13.839
23	22	46	11.79	1.8105	S. 6	21	52.7	13.853

TUESDAY 30.

Hour	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
0	22	48	0.33	1.8076	S. 6	8	1.2	13.865
1	22	49	48.70	1.8048	5	54	8.9	13.877
2	22	51	36.91	1.8021	5	40	15.9	13.890
3	22	53	24.95	1.7994	5	26	22.1	13.902
4	22	55	12.83	1.7968	5	12	27.7	13.912
5	22	57	0.56	1.7943	4	58	32.7	13.921
6	22	58	48.15	1.7919	4	44	37.2	13.929
7	23	0	35.59	1.7895	4	30	41.2	13.937
8	23	2	22.89	1.7873	4	16	44.8	13.944
9	23	4	10.06	1.7851	4	2	47.9	13.951
10	23	5	57.10	1.7829	3	48	50.7	13.956
11	23	7	44.01	1.7808	3	34	53.2	13.961
12	23	9	30.80	1.7789	3	20	55.4	13.965
13	23	11	17.48	1.7771	3	6	57.4	13.968
14	23	13	4.05	1.7753	2	52	59.2	13.972
15	23	14	50.51	1.7735	2	39	0.8	13.974
16	23	16	36.87	1.7719	2	25	2.3	13.975
17	23	18	23.14	1.7704	2	11	3.8	13.976
18	23	20	9.32	1.7689	1	57	5.2	13.976
19	23	21	55.41	1.7675	1	43	6.7	13.975
20	23	23	41.42	1.7662	1	29	8.2	13.974
21	23	25	27.35	1.7649	1	15	9.8	13.972
22	23	27	13.21	1.7637	1	1	11.6	13.968
23	23	28	59.00	1.7627	0	47	13.6	13.965
24	23	30	44.73	1.7617	S. 0	33	15.8	13.961

WEDNESDAY, JULY 1.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	23	30	44.73	1.7617	S. 0	33	15.8	13.961

PHASES OF THE MOON.

			d	h	m
☾	Last Quarter . . .	June	2	20	2.2
●	New Moon		10	20	42.8
☽	First Quarter		17	23	40.6
○	Full Moon		24	18	54.9

			d	h
☾	Apogee	June	4	20.6
☾	Perigee		20	3.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon. ° ′ ″	P. L. of Diff.	IIIh. ° ′ ″	P. L. of Diff.	VIh. ° ′ ″	P. L. of Diff.	IXh. ° ′ ″	P. L. of Diff.
1	SATURN	W.	97 4 19	2897	98 36 42	2910	100 8 48	2923	101 40 38	2935
	Antares	W.	72 39 22	2882	74 12 4	2894	75 44 30	2906	77 16 41	2919
	MARS	E.	47 4 54	3183	45 38 25	3198	44 12 14	3214	42 46 21	3228
	a Arietis	E.	75 34 26	2901	74 2 9	2914	72 30 8	2927	70 58 23	2939
	SUN	E.	110 27 9	3251	109 2 0	3265	107 37 7	3278	106 12 30	3290
2	SATURN	W.	109 16 5	2991	110 46 29	3001	112 16 40	3011	113 46 39	3021
	Antares	W.	84 53 57	2972	86 24 45	2981	87 55 21	2990	89 25 46	2999
	MARS	E.	35 41 13	3300	34 17 1	3314	32 53 6	3328	31 29 27	3343
	a Arietis	E.	63 23 22	2995	61 53 3	3005	60 22 57	3015	58 53 3	3024
	SUN	E.	99 12 53	3347	97 49 36	3357	96 26 30	3367	95 3 36	3376
3	Antares	W.	96 55 22	3034	98 24 52	3041	99 54 14	3046	101 23 30	3050
	a Aquilæ	W.	50 51 29	4323	51 58 0	4277	53 5 14	4234	54 13 8	4195
	a Arietis	E.	51 26 14	3065	49 57 22	3072	48 28 38	3079	47 0 3	3085
	SUN	E.	88 11 30	3415	86 49 30	3421	85 27 37	3426	84 5 50	3431
4	Antares	W.	108 48 36	3067	110 17 26	3069	111 46 13	3070	113 14 59	3072
	a Aquilæ	W.	60 1 8	4037	61 12 11	4011	62 23 40	3987	63 35 32	3965
	a Arietis	E.	39 38 57	3114	38 11 4	3119	36 43 17	3124	35 15 36	3129
	SUN	E.	77 18 14	3450	75 56 54	3453	74 35 37	3454	73 14 22	3455
5	*a* Aquilæ	W.	69 40 4	3871	70 53 53	3855	72 7 59	3839	73 22 21	3825
	Fomalhaut	W.	43 14 47	3779	44 30 11	3741	45 46 15	3705	47 2 57	3673
	SUN	E.	66 28 17	3454	65 7 2	3454	63 45 46	3452	62 24 28	3449
6	*a* Aquilæ	W.	79 37 40	3762	80 53 22	3750	82 9 16	3741	83 25 20	3730
	Fomalhaut	W.	53 34 25	3538	54 54 7	3515	56 14 14	3494	57 34 45	3474
	SUN	E.	55 37 7	3431	54 15 26	3427	52 53 40	3422	51 31 48	3417
7	*a* Aquilæ	W.	89 48 8	3689	91 5 7	3682	92 22 13	3676	93 39 26	3669
	Fomalhaut	W.	64 22 45	3382	65 45 22	3366	67 8 17	3350	68 31 31	3334
	a Pegasi	W.	42 15 37	3453	43 36 54	3420	44 58 48	3390	46 21 16	3362
	SUN	E.	44 40 55	3386	43 18 23	3380	41 55 44	3373	40 32 57	3366
8	*a* Aquilæ	W.	100 6 52	3650	101 24 32	3649	102 42 13	3649	103 59 55	3649
	Fomalhaut	W.	75 32 0	3263	76 56 55	3249	78 22 6	3236	79 47 33	3224
	a Pegasi	W.	53 21 8	3242	54 46 28	3221	56 12 12	3201	57 38 20	3181
	MARS	W.	32 15 38	3260	33 40 36	3247	35 5 50	3233	36 31 20	3219
	SUN	E.	33 37 5	3333	32 13 32	3326	30 49 51	3320	29 26 3	3315
12	SUN	W.	14 17 27	3153	15 44 33	3101	17 12 41	3062	18 41 37	3030
	Regulus	E.	52 45 16	2604	51 6 26	2594	49 27 23	2585	47 48 7	2576
	Spica	E.	106 47 50	2607	105 9 4	2597	103 30 5	2588	101 50 53	2578
13	SUN	W.	26 14 34	2922	27 46 25	2906	29 18 36	2891	30 51 6	2877
	Spica	E.	93 31 45	2534	91 51 19	2526	90 10 42	2517	88 29 53	2509
	SATURN	E.	114 4 2	2559	112 24 10	2549	110 44 5	2540	109 3 47	2531
14	SUN	W.	38 37 43	2819	40 11 46	2809	41 46 2	2799	43 20 31	2790
	Spica	E.	80 3 1	2471	78 21 7	2463	76 39 2	2456	74 56 47	2449
	SATURN	E.	100 39 19	2489	98 57 51	2482	97 16 13	2475	95 34 25	2467

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV$^{\text{h}}$.	P. L. of Diff.	XVIII$^{\text{h}}$.	P. L. of Diff.	XXI$^{\text{h}}$.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	SATURN	W.	103 12 13	2947	104 43 32	2958	106 14 37	2969	107 45 28	2981
	Antares	W.	78 48 36	2930	80 20 17	2942	81 51 43	2952	83 22 56	2962
	MARS	E.	41 20 45	3242	39 55 26	3258	38 30 25	3272	37 5 41	3286
	α Arietis	E.	69 26 54	2951	67 55 40	2962	66 24 40	2973	64 53 54	2985
	SUN	E.	104 48 7	3303	103 23 59	3314	102 0 4	3325	100 36 22	3337
2	SATURN	W.	115 16 26	3030	116 46 2	3039	118 15 27	3047	119 44 41	3056
	Antares	W.	90 56 0	3007	92 26 4	3014	93 55 59	3022	95 25 45	3029
	MARS	E.	30 6 5	3358	28 43 0	3372	27 20 12	3388	25 57 42	3405
	α Arietis	E.	57 23 20	3033	55 53 48	3042	54 24 27	3050	52 55 16	3057
	SUN	E.	93 40 52	3385	92 18 18	3393	90 55 53	3400	89 33 37	3408
3	Antares	W.	102 52 41	3055	104 21 46	3058	105 50 47	3062	107 19 43	3065
	α Aquilæ	W.	55 21 39	4158	56 30 45	4125	57 40 23	4093	58 50 31	4064
	α Arietis	E.	45 31 35	3091	44 3 15	3097	42 35 2	3103	41 6 56	3109
	SUN	E.	82 44 9	3437	81 22 34	3440	80 1 3	3445	78 39 37	3447
4	Antares	W.	114 43 43	3072	116 12 27	3073	117 41 10	3072	119 9 54	3071
	α Aquilæ	W.	64 47 46	3944	66 0 21	3923	67 13 17	3905	68 26 32	3888
	α Arietis	E.	33 48 1	3134	32 20 33	3139	30 53 11	3145	29 25 56	3151
	SUN	E.	71 53 8	3456	70 31 55	3457	69 10 43	3456	67 49 30	3456
5	α Aquilæ	W.	74 36 57	3811	75 51 48	3798	77 6 52	3785	78 22 10	3773
	Fomalhaut	W.	48 20 13	3642	49 38 2	3614	50 56 21	3587	52 15 9	3562
	SUN	E.	61 3 7	3446	59 41 43	3443	58 20 15	3439	56 58 43	3436
6	α Aquilæ	W.	84 41 35	3721	85 58 0	3712	87 14 34	3704	88 31 17	3696
	Fomalhaut	W.	58 55 38	3454	60 16 53	3435	61 38 30	3416	63 0 28	3400
	SUN	E.	50 9 51	3411	48 47 47	3406	47 25 37	3400	46 3 20	3393
7	α Aquilæ	W.	94 56 46	3664	96 14 11	3660	97 31 41	3656	98 49 15	3653
	Fomalhaut	W.	69 55 3	3319	71 18 52	3305	72 42 58	3290	74 7 21	3276
	α Pegasi	W.	47 44 16	3336	49 7 46	3310	50 31 46	3286	51 56 14	3264
	SUN	E.	39 10 2	3359	37 46 59	3353	36 23 49	3346	35 0 31	3339
8	α Aquilæ	W.	105 17 37	3650	106 35 17	3652	107 52 55	3656	109 10 29	3661
	Fomalhaut	W.	81 13 14	3211	82 39 10	3199	84 5 20	3188	85 31 44	3176
	α Pegasi	W.	59 4 52	3163	60 31 46	3144	61 59 2	3127	63 26 39	3110
	MARS	W.	37 57 7	3205	39 23 10	3193	40 49 28	3179	42 16 2	3167
	SUN	E.	28 2 9	3311	26 38 10	3308	25 14 6	3305	23 50 0	3304
12	SUN	W.	20 11 12	3003	21 41 21	2979	23 12 0	2958	24 43 5	2939
	Regulus	E.	46 8 39	2566	44 28 58	2558	42 49 5	2549	41 9 0	2540
	Spica	E.	100 11 28	2569	98 31 51	2560	96 52 1	2551	95 11 59	2543
13	SUN	W.	32 23 54	2864	33 56 59	2852	35 30 19	2841	37 3 54	2830
	Spica	E.	86 48 52	2501	85 7 40	2494	83 26 18	2486	81 44 45	2478
	SATURN	E.	107 23 17	2522	105 42 35	2514	104 1 41	2506	102 20 36	2497
14	SUN	W.	44 55 12	2781	46 30 5	2772	48 5 10	2763	49 40 26	2756
	Spica	E.	73 14 22	2443	71 31 48	2436	69 49 4	2429	68 6 11	2422
	SATURN	E.	93 52 26	2460	92 10 17	2454	90 27 59	2448	88 45 32	2441

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
15	SUN	W.	51 15 52	2747	52 51 29	2739	54 27 17	2732	56 3 14	2725
	Spica	E.	66 23 8	2416	64 39 56	2410	62 56 36	2404	61 13 7	2398
	SATURN	E.	87 2 55	2434	85 20 9	2429	83 37 15	2423	81 54 13	2417
	Antares	E.	112 15 17	2412	110 32 0	2406	108 48 34	2400	107 4 59	2394
16	SUN	W.	64 5 22	2691	65 42 14	2684	67 19 15	2678	68 56 24	2672
	Pollux	W.	38 37 31	2389	40 21 22	2381	42 5 24	2375	43 49 35	2368
	JUPITER	W.	21 40 30	2427	23 23 26	2422	25 6 30	2416	26 49 42	2410
	Spica	E.	52 33 37	2370	50 49 19	2365	49 4 54	2360	47 20 22	2355
	SATURN	E.	73 17 3	2391	71 33 16	2387	69 49 22	2382	68 5 22	2378
	Antares	E.	98 24 58	2365	96 40 33	2360	94 56 1	2355	93 11 21	2349
17	SUN	W.	77 4 10	2644	78 42 5	2639	80 20 7	2634	81 58 16	2629
	Pollux	W.	52 32 45	2339	54 17 48	2334	56 2 58	2328	57 48 16	2324
	JUPITER	W.	35 27 38	2384	37 11 35	2380	38 55 39	2375	40 39 49	2371
	SATURN	E.	59 23 59	2361	57 39 28	2359	55 54 54	2356	54 10 16	2355
	Antares	E.	84 26 8	2324	82 40 44	2320	80 55 14	2315	79 9 37	2311
18	SUN	W.	90 10 38	2607	91 49 24	2602	93 28 16	2599	95 7 13	2595
	Pollux	W.	66 36 28	2302	68 22 25	2298	70 8 28	2294	71 54 37	2290
	JUPITER	W.	49 22 16	2350	51 7 3	2346	52 51 56	2343	54 36 53	2339
	Regulus	W.	29 37 13	2291	31 23 25	2287	33 9 43	2284	34 56 6	2281
	SATURN	E.	45 26 41	2353	43 41 58	2353	41 57 16	2355	40 12 37	2359
	Antares	E.	70 19 58	2291	68 33 45	2287	66 47 26	2283	65 1 2	2280
19	SUN	W.	103 23 9	2579	105 2 33	2577	106 42 0	2574	108 21 30	2572
	Pollux	W.	80 46 35	2274	82 33 12	2272	84 19 53	2270	86 6 37	2267
	JUPITER	W.	63 22 53	2324	65 8 18	2322	66 53 46	2320	68 39 17	2317
	Regulus	W.	43 49 13	2265	45 36 4	2263	47 22 58	2261	49 9 55	2258
	Antares	E.	56 7 50	2265	54 20 59	2262	52 34 4	2260	50 47 6	2258
	a Aquilæ	E.	107 42 31	3031	106 12 57	3014	104 43 2	3000	103 12 49	2987
20	SUN	W.	116 39 38	2565	118 19 21	2565	119 59 4	2565	121 38 47	2565
	Pollux	W.	95 1 0	2260	96 47 59	2260	98 34 58	2259	100 21 58	2259
	JUPITER	W.	77 27 36	2310	79 13 21	2309	80 59 8	2308	82 44 56	2308
	Regulus	W.	58 5 24	2251	59 52 36	2250	61 39 49	2249	63 27 3	2249
	Antares	E.	41 51 36	2251	40 4 24	2250	38 17 11	2249	36 29 57	2249
	a Aquilæ	E.	95 38 21	2946	94 7 0	2942	92 35 34	2939	91 4 4	2938
21	JUPITER	W.	91 33 52	2311	93 19 36	2312	95 5 18	2313	96 50 58	2316
	Regulus	W.	72 23 12	2251	74 10 23	2253	75 57 32	2255	77 44 38	2257
	a Aquilæ	E.	83 26 50	2954	81 55 39	2961	80 24 37	2970	78 53 47	2981
	Fomalhaut	E.	108 15 55	2601	106 37 1	2596	104 58 0	2592	103 18 54	2589
22	Regulus	W.	86 39 15	2272	88 25 56	2275	90 12 32	2280	91 59 1	2285
	Spica	W.	32 39 41	2282	34 26 7	2285	36 12 29	2288	37 58 46	2293
	a Aquilæ	E.	71 23 41	3062	69 54 45	3084	68 26 16	3109	66 58 17	3135
	Fomalhaut	E.	95 2 51	2590	93 23 42	2592	91 44 36	2596	90 5 35	2601
23	Regulus	W.	100 49 31	2313	102 35 11	2321	104 20 40	2328	106 5 59	2336
	Spica	W.	46 48 25	2320	48 33 56	2326	50 19 18	2333	52 4 30	2340
	a Aquilæ	E.	59 47 29	3313	58 23 32	3358	57 0 28	3408	55 38 21	3462

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
15	Sun	W.	57 39 21	2718	59 15 37	2710	60 52 3	2704	62 28 38	2697
	Spica	E.	59 29 29	2392	57 45 43	2387	56 1 49	2381	54 17 47	2375
	Saturn	E.	80 11 2	2411	78 27 43	2406	76 44 17	2401	75 0 44	2396
	Antares	E.	105 21 16	2388	103 37 24	2382	101 53 23	2377	100 9 15	2371
16	Sun	W.	70 33 42	2666	72 11 8	2660	73 48 41	2655	75 26 22	2649
	Pollux	W.	45 33 56	2362	47 18 26	2356	49 3 4	2350	50 47 50	2344
	Jupiter	W.	28 33 2	2405	30 16 30	2400	32 0 5	2394	33 43 48	2389
	Spica	E.	45 35 42	2350	43 50 55	2346	42 6 2	2341	40 21 2	2337
	Saturn	E.	66 21 16	2374	64 37 4	2371	62 52 47	2367	61 8 25	2364
	Antares	E.	91 26 33	2344	89 41 38	2339	87 56 35	2334	86 11 25	2329
17	Sun	W.	83 36 32	2624	85 14 54	2619	86 53 23	2615	88 31 58	2611
	Pollux	W.	59 33 41	2319	61 19 13	2314	63 4 52	2310	64 50 37	2306
	Jupiter	W.	42 24 6	2366	44 8 29	2362	45 52 59	2357	47 37 35	2354
	Saturn	E.	52 25 36	2353	50 40 54	2352	48 56 10	2351	47 11 25	2352
	Antares	E.	77 23 53	2307	75 38 3	2302	73 52 7	2298	72 6 5	2295
18	Sun	W.	96 46 15	2591	98 25 22	2588	100 4 33	2585	101 43 49	2582
	Pollux	W.	73 40 51	2287	75 27 10	2283	77 13 34	2281	79 0 2	2277
	Jupiter	W.	56 21 56	2335	58 7 4	2333	59 52 16	2330	61 37 32	2326
	Regulus	W.	36 42 34	2277	38 29 7	2274	40 15 45	2271	42 2 27	2268
	Saturn	E.	38 28 3	2363	36 43 35	2368	34 59 15	2375	33 15 5	2385
	Antares	E.	63 14 33	2277	61 27 59	2273	59 41 20	2270	57 54 37	2268
19	Sun	W.	110 1 3	2570	111 40 39	2569	113 20 17	2567	114 59 57	2566
	Pollux	W.	87 53 25	2266	89 40 15	2264	91 27 8	2262	93 14 3	2261
	Jupiter	W.	70 24 52	2315	72 10 30	2313	73 56 10	2312	75 41 52	2311
	Regulus	W.	50 56 56	2256	52 44 0	2255	54 31 6	2253	56 18 14	2252
	Antares	E.	49 0 5	2256	47 13 1	2255	45 25 55	2253	43 38 46	2252
	α Aquilæ	E.	101 42 20	2976	100 11 37	2965	98 40 41	2958	97 9 35	2951
20	Sun	W.	123 18 30	2566	124 58 12	2566	126 37 53	2567	128 17 33	2569
	Pollux	W.	102 8 58	2259	103 55 58	2259	105 42 58	2260	107 29 57	2261
	Jupiter	W.	84 30 44	2308	86 16 32	2308	88 2 20	2309	89 48 7	2310
	Regulus	W.	65 14 17	2249	67 1 32	2249	68 48 46	2249	70 36 0	2250
	Antares	E.	34 42 43	2249	32 55 29	2249	31 8 15	2250	29 21 2	2250
	α Aquilæ	E.	89 32 33	2938	88 1 2	2940	86 29 34	2942	84 58 9	2947
21	Jupiter	W.	98 36 34	2318	100 22 7	2321	102 7 36	2324	103 53 1	2328
	Regulus	W.	79 31 41	2259	81 18 41	2262	83 5 37	2265	84 52 28	2268
	α Aquilæ	E.	77 23 10	2993	75 52 49	3007	74 22 45	3024	72 53 2	3042
	Fomalhaut	E.	101 39 44	2587	100 0 31	2586	98 21 17	2586	96 42 3	2588
22	Regulus	W.	93 45 23	2290	95 31 37	2295	97 17 44	2301	99 3 42	2307
	Spica	W.	39 44 56	2297	41 31 0	2302	43 16 56	2307	45 2 45	2313
	α Aquilæ	E.	65 30 50	3165	64 3 59	3197	62 37 46	3232	61 12 15	3270
	Fomalhaut	E.	88 26 41	2606	86 47 54	2613	85 9 17	2621	83 30 50	2629
23	Regulus	W.	107 51 6	2344	109 36 2	2352	111 20 46	2360	113 5 18	2370
	Spica	W.	53 49 31	2348	55 34 21	2356	57 18 59	2365	59 3 24	2373
	α Aquilæ	E.	54 17 14	3521	52 57 13	3586	51 38 23	3656	50 20 49	3733

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III$^{\text{h}}$.	P. L. of Diff.	VI$^{\text{h}}$.	P. L. of Diff.	IX$^{\text{h}}$.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Fomalhaut	E.	81 52 35	2638	80 14 32	2649	78 36 44	2660	76 59 11	2672
	a Pegasi	E.	103 44 0	2520	102 3 15	2525	100 22 37	2530	98 42 6	2535
24	Spica	W.	60 47 37	2382	62 31 37	2392	64 15 23	2402	65 58 55	2412
	SATURN	W.	41 1 35	2450	42 43 58	2455	44 26 15	2460	46 8 24	2467
	Fomalhaut	E.	68 56 2	2751	67 20 30	2770	65 45 23	2791	64 10 43	2812
	a Pegasi	E.	90 21 45	2574	88 42 15	2585	87 2 59	2595	85 23 57	2606
25	Spica	W.	74 32 49	2467	76 14 48	2479	77 56 31	2492	79 37 56	2504
	SATURN	W.	54 36 38	2508	56 17 40	2517	57 58 29	2528	59 39 3	2538
	Antares	W.	28 39 1	2465	30 21 4	2477	32 2 50	2488	33 44 20	2501
	Fomalhaut	E.	56 25 9	2946	54 53 49	2980	53 23 11	3014	51 53 16	3052
	a Pegasi	E.	77 12 53	2672	75 35 35	2687	73 58 38	2703	72 22 2	2719
	MARS	E.	108 20 33	2726	106 44 28	2739	105 8 40	2751	103 33 8	2764
	a Arietis	E.	119 22 36	2487	117 41 4	2498	115 59 48	2510	114 18 48	2521
26	Spica	W.	88 0 38	2569	89 40 16	2582	91 19 36	2596	92 58 37	2610
	SATURN	W.	67 58 4	2597	69 37 3	2610	71 15 44	2623	72 54 8	2635
	Antares	W.	42 7 23	2565	43 47 6	2579	45 26 30	2593	47 5 35	2606
	Fomalhaut	E.	44 36 21	3288	43 11 55	3347	41 48 38	3412	40 26 35	3484
	a Pegasi	E.	64 24 44	2811	62 50 31	2833	61 16 46	2854	59 43 28	2876
	MARS	E.	95 39 46	2831	94 5 59	2845	92 32 30	2859	90 59 19	2874
	a Arietis	E.	105 58 0	2584	104 18 43	2597	102 39 44	2610	101 1 3	2624
27	Spica	W.	101 9 2	2678	102 46 11	2692	104 23 1	2706	105 59 33	2720
	SATURN	W.	81 1 43	2702	82 38 20	2716	84 14 38	2729	85 50 39	2744
	Antares	W.	55 16 22	2675	56 53 35	2689	58 30 30	2703	60 7 6	2716
	a Pegasi	E.	52 4 36	3005	50 34 30	3034	49 5 0	3066	47 36 9	3099
	MARS	E.	83 18 6	2948	81 46 48	2962	80 15 48	2977	78 45 7	2993
	a Arietis	E.	92 52 14	2692	91 15 24	2706	89 38 52	2720	88 2 39	2734
	Aldebaran	E.	124 16 51	2780	122 41 57	2791	121 7 17	2801	119 32 51	2812
28	SATURN	W.	93 46 9	2812	95 20 21	2825	96 54 16	2838	98 27 54	2852
	Antares	W.	68 5 33	2785	69 40 21	2798	71 14 52	2811	72 49 5	2824
	MARS	E.	71 16 22	3067	69 47 32	3081	68 18 59	3096	66 50 45	3110
	a Arietis	E.	80 6 7	2802	78 31 42	2816	76 57 35	2829	75 23 45	2842
	Aldebaran	E.	111 44 15	2869	110 11 16	2880	108 38 32	2892	107 6 3	2903
	SUN	E.	140 47 29	3150	139 20 20	3163	137 53 27	3176	136 26 49	3189
29	SATURN	W.	106 11 49	2916	107 43 47	2928	109 15 30	2940	110 46 58	2953
	Antares	W.	80 36 7	2886	82 8 44	2897	83 41 7	2909	85 13 15	2920
	MARS	E.	59 33 51	3180	58 7 18	3193	56 41 1	3207	55 15 0	3220
	a Arietis	E.	67 38 46	2905	66 6 34	2918	64 34 38	2930	63 2 57	2941
	Aldebaran	E.	99 27 16	2961	97 56 14	2971	96 25 25	2982	94 54 50	2993
	SUN	E.	129 17 27	3251	127 52 18	3263	126 27 23	3275	125 2 42	3286
30	Antares	W.	92 50 35	2969	94 21 26	2978	95 52 6	2987	97 22 35	2996
	a Aquilæ	W.	47 45 0	4417	48 50 6	4361	49 56 3	4308	51 2 48	4261
	MARS	E.	48 8 43	3282	46 44 11	3294	45 19 53	3306	43 55 49	3318
	a Arietis	E.	55 28 3	2995	53 57 44	3005	52 27 38	3015	50 57 44	3025
	Aldebaran	E.	87 25 10	3043	85 55 50	3052	84 26 42	3061	82 57 45	3070
	SUN	E.	118 2 26	3338	116 38 58	3347	115 15 41	3357	113 52 35	3365

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Fomalhaut E.	75 21 54	2686	73 44 55	2701	72 8 16	2716	70 31 58	2733
	α Pegasi E.	97 1 42	2542	95 21 27	2549	93 41 22	2557	92 1 28	2565
24	Spica W.	67 42 12	2422	69 25 15	2433	71 8 2	2445	72 50 33	2455
	SATURN W.	47 50 24	2474	49 32 14	2481	51 13 54	2489	52 55 22	2498
	Fomalhaut E.	62 36 31	2836	61 2 50	2861	59 29 41	2888	57 57 7	2916
	α Pegasi E.	83 45 10	2618	82 6 39	2631	80 28 26	2643	78 50 30	2657
25	Spica W.	81 19 4	2517	82 59 54	2529	84 40 27	2542	86 20 42	2556
	SATURN W.	61 19 23	2550	62 59 27	2561	64 39 16	2573	66 18 48	2585
	Antares W.	35 25 32	2514	37 6 26	2526	38 47 3	2539	40 27 22	2552
	Fomalhaut E.	50 24 8	3092	48 55 49	3135	47 28 22	3182	46 1 51	3233
	α Pegasi E.	70 45 47	2736	69 9 55	2754	67 34 27	2772	65 59 23	2792
	MARS E.	101 57 53	2777	100 22 55	2790	98 48 14	2804	97 13 51	2818
	α Arietis E.	112 38 4	2533	110 57 37	2545	109 17 27	2559	107 37 35	2571
26	Spica W.	94 37 19	2623	96 15 43	2637	97 53 48	2651	99 31 34	2664
	SATURN W.	74 32 15	2649	76 10 4	2662	77 47 35	2675	79 24 48	2689
	Antares W.	48 44 22	2620	50 22 50	2634	52 0 59	2647	53 38 50	2661
	Fomalhaut E.	39 5 53	3563	37 46 38	3649	36 28 57	3746	35 12 58	3853
	α Pegasi E.	58 10 39	2900	56 38 20	2925	55 6 33	2950	53 35 18	2977
	MARS E.	89 26 27	2889	87 53 54	2903	86 21 39	2918	84 49 43	2933
	α Arietis E.	99 22 41	2638	97 44 37	2651	96 6 51	2664	94 29 23	2678
27	Spica W.	107 35 46	2734	109 11 41	2748	110 47 17	2762	112 22 35	2775
	SATURN W.	87 26 21	2757	89 1 45	2771	90 36 51	2785	92 11 39	2798
	Antares W.	61 43 24	2731	63 19 23	2744	64 55 4	2758	66 30 27	2771
	α Pegasi E.	46 7 58	3134	44 40 30	3171	43 13 46	3211	41 47 50	3253
	MARS E.	77 14 45	3008	75 44 42	3022	74 14 57	3037	72 45 30	3052
	α Arietis E.	86 26 44	2747	84 51 7	2762	83 15 49	2775	81 40 49	2789
	Aldebaran E.	117 58 39	2823	116 24 41	2835	114 50 58	2845	113 17 29	2857
28	SATURN W.	100 1 14	2866	101 34 17	2878	103 7 4	2891	104 39 35	2904
	Antares W.	74 23 2	2837	75 56 42	2849	77 30 6	2862	79 3 14	2873
	MARS E.	65 22 48	3124	63 55 8	3139	62 27 46	3153	61 0 40	3167
	α Arietis E.	73 50 12	2855	72 16 56	2868	70 43 56	2881	69 11 13	2894
	Aldebaran E.	105 33 48	2915	104 1 48	2927	102 30 3	2938	100 58 32	2950
	SUN E.	135 0 27	3202	133 34 20	3214	132 8 28	3226	130 42 50	3239
29	SATURN W.	112 18 10	2964	113 49 8	2976	115 19 51	2987	116 50 20	2998
	Antares W.	86 45 9	2930	88 16 50	2941	89 48 17	2950	91 19 32	2960
	MARS E.	53 49 15	3233	52 23 45	3246	50 58 30	3258	49 33 29	3270
	α Arietis E.	61 31 30	2953	60 0 18	2963	58 29 19	2974	56 58 34	2985
	Aldebaran E.	93 24 29	3004	91 54 21	3014	90 24 25	3023	88 54 41	3034
	SUN E.	123 38 14	3297	122 13 59	3307	120 49 56	3318	119 26 5	3328
30	Antares W.	98 52 53	3003	100 23 2	3010	101 53 2	3018	103 22 53	3024
	α Aquilæ W.	52 10 17	4217	53 18 27	4178	54 27 14	4141	55 36 36	4108
	MARS E.	42 31 58	3329	41 8 20	3341	39 44 56	3352	38 21 45	3364
	α Arietis E.	49 28 2	3034	47 58 31	3042	46 29 10	3051	45 0 0	3060
	Aldebaran E.	81 28 59	3078	80 0 23	3087	78 31 57	3094	77 3 40	3102
	SUN E.	112 29 38	3373	111 6 51	3380	109 44 12	3388	108 21 42	3394

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.
		h m s	s	° ′ ″	″	′ ″	s	m s
Wed.	1	6 43 49.95	10.332	N.23 4 19.8	−10.81	15 46.16	68.75	3 40.69
Thur.	2	6 47 57.80	10.321	22 59 48.2	11.82	15 46.15	68.71	3 51.95
Frid.	3	6 52 5.38	10.310	22 54 52.5	12.82	15 46.15	68.67	4 2.94
Sat.	4	6 56 12.68	10.297	22 49 32.7	−13.82	15 46.15	68.63	4 13.64
SUN.	5	7 0 19.65	10.284	22 43 49.1	14.81	15 46.16	68.58	4 24.03
Mon.	6	7 4 26.29	10.269	22 37 41.7	15.80	15 46.17	68.53	4 34.09
Tues.	7	7 8 32.58	10.254	22 31 10.7	−16.78	15 46.18	68.47	4 43.80
Wed.	8	7 12 38.49	10.238	22 24 16.3	17.75	15 46.20	68.42	4 53.12
Thur.	9	7 16 44.01	10.221	22 16 58.7	18.72	15 46.23	68.36	5 2.05
Frid.	10	7 20 49.11	10.203	22 9 17.9	−19.68	15 46.26	68.30	5 10.57
Sat.	11	7 24 53.76	10.184	22 1 14.2	20.63	15 46.30	68.24	5 18.64
SUN.	12	7 28 57.96	10.165	21 52 47.9	21.57	15 46.34	68.17	5 26.26
Mon.	13	7 33 1.67	10.145	21 43 59.0	−22.50	15 46.39	68.11	5 33.40
Tues.	14	7 37 4.90	10.124	21 34 47.9	23.42	15 46.45	68.04	5 40.04
Wed.	15	7 41 7.60	10.102	21 25 14.8	24.34	15 46.51	67.97	5 46.18
Thur.	16	7 45 9.78	10.080	21 15 19.8	−25.24	15 46.57	67.90	5 51.78
Frid.	17	7 49 11.42	10.057	21 5 3.3	26.13	15 46.64	67.82	5 56.85
Sat.	18	7 53 12.51	10.034	20 54 25.5	27.01	15 46.72	67.74	6 1.37
SUN.	19	7 57 13.03	10.010	20 43 26.5	−27.89	15 46.80	67.67	6 5.32
Mon.	20	8 1 12.98	9.986	20 32 6.7	28.76	15 46.88	67.59	6 8.70
Tues.	21	8 5 12.36	9.962	20 20 26.2	29.61	15 46.96	67.51	6 11.51
Wed.	22	8 9 11.14	9.937	20 8 25.4	−30.45	15 47.05	67.43	6 13.74
Thur.	23	8 13 9.34	9.913	19 56 4.5	31.29	15 47.15	67.35	6 15.38
Frid.	24	8 17 6.95	9.888	19 43 23.7	32.11	15 47.24	67.27	6 16.43
Sat.	25	8 21 3.97	9.863	19 30 23.2	−32.92	15 47.34	67.19	6 16.88
SUN.	26	8 25 0.40	9.839	19 17 3.4	33.72	15 47.44	67.10	6 16.75
Mon.	27	8 28 56.22	9.814	19 3 24.4	34.52	15 47.55	67.02	6 16.03
Tues.	28	8 32 51.46	9.789	18 49 26.5	−35.30	15 47.65	66.93	6 14.71
Wed.	29	8 36 46.11	9.765	18 35 10.0	36.07	15 47.76	66.84	6 12.81
Thur.	30	8 40 40.17	9.740	18 20 35.1	36.83	15 47.88	66.76	6 10.31
Frid.	31	8 44 33.63	9.716	18 5 42.1	37.58	15 47.99	66.67	6 7.23
Sat.	32	8 48 26.51	9.691	N.17 50 31.2	−38.32	15 48.11	66.58	6 3.56

Note.—The mean time of semidiameter passing may be found by subtracting $0^{s}.19$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasin

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	6 43 49.32	10.331	N.23 4 20.5	−10.81	3 40.66	0.474	6 40 8.66
Thur.	2	6 47 57.14	10.320	22 59 48.9	11.82	3 51.92	0.463	6 44 5.22
Frid.	3	6 52 4.69	10.309	22 54 53.3	12.82	4 2.91	0.452	6 48 1.78
Sat.	4	6 56 11.95	10.296	22 49 33.7	−13.82	4 13.61	0.439	6 51 58.34
SUN.	5	7 0 18.90	10.283	22 43 50.2	14.81	4 24.00	0.426	6 55 54.89
Mon.	6	7 4 25.51	10.268	22 37 42.9	15.79	4 34.06	0.411	6 59 51.45
Tues.	7	7 8 31.78	10.253	22 31 12.0	−16.77	4 43.77	0.396	7 3 48.01
Wed.	8	7 12 37.66	10.237	22 24 17.8	17.75	4 53.09	0.380	7 7 44.57
Thur.	9	7 16 43.15	10.220	22 17 0.2	18.71	5 2.02	0.364	7 11 41.13
Frid.	10	7 20 48.23	10.202	22 9 19.6	−19.67	5 10.54	0.346	7 15 37.69
Sat.	11	7 24 52.86	10.183	22 1 16.0	20.62	5 18.62	0.327	7 19 34.24
SUN.	12	7 28 57.04	10.164	21 52 49.8	21.56	5 26.23	0.307	7 23 30.80
Mon.	13	7 33 0.74	10.144	21 44 1.1	−22.49	5 33.37	0.287	7 27 27.36
Tues.	14	7 37 3.94	10.123	21 34 50.1	23.42	5 40.02	0.266	7 31 23.92
Wed.	15	7 41 6.63	10.101	21 25 17.1	24.33	5 46.16	0.245	7 35 20.48
Thur.	16	7 45 8.80	10.079	21 15 22.3	−25.23	5 51.76	0.223	7 39 17.04
Frid.	17	7 49 10.42	10.056	21 5 5.9	26.12	5 56.83	0.200	7 43 13.59
Sat.	18	7 53 11.50	10.033	20 54 28.1	27.01	6 1.35	0.177	7 47 10.15
SUN.	19	7 57 12.01	10.010	20 43 29.3	−27.89	6 5.30	0.153	7 51 6.71
Mon.	20	8 1 11.96	9.986	20 32 9.6	28.75	6 8.69	0.129	7 55 3.27
Tues.	21	8 5 11.33	9.962	20 20 29.2	29.60	6 11.50	0.105	7 58 59.82
Wed.	22	8 9 10.11	9.937	20 8 28.6	−30.45	6 13.73	0.081	8 2 56.38
Thur.	23	8 13 8.31	9.913	19 56 7.7	31.28	6 15.37	0.057	8 6 52.94
Frid.	24	8 17 5.92	9.888	19 43 27.0	32.11	6 16.42	0.032	8 10 49.50
Sat.	25	8 21 2.94	9.863	19 30 26.6	−32.92	6 16.88	0.007	8 14 46.05
SUN.	26	8 24 59.36	9.839	19 17 6.9	33.72	6 16.75	0.018	8 18 42.61
Mon.	27	8 28 55.20	9.814	19 3 28.0	34.51	6 16.03	0.043	8 22 39.17
Tues.	28	8 32 50.44	9.790	18 49 30.2	−35.30	6 14.72	0.067	8 26 35.72
Wed.	29	8 36 45.10	9.765	18 35 13.7	36.07	6 12.82	0.092	8 30 32.28
Thur	30	8 40 39.16	9.740	18 20 38.8	36.83	6 10.32	0.116	8 34 28.84
Frid.	31	8 44 32.64	9.716	18 5 45.9	37.58	6 7.25	0.141	8 38 25.40
Sat.	32	8 48 25.53	9.692	N.17 50 35.0	−38.32	6 3.58	0.165	8 42 21.95

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
$+9^{s}.8565$
(Table III.)

AT GREENWICH MEAN NOON.								
		THE SUN'S						
Day of the Month.	Day of the Year.	TRUE LONGITUDE. λ	TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	183	100 4 30.8	3 56.0	142.98	+ 0.20	0.0072090	+ 2.1	17 17 0.98
2	184	101 1 42.4	1 7.5	142.99	0.31	0.0072130	1.3	17 13 5.07
3	185	101 58 54.3	58 19.2	143.00	0.41	0.0072150	+ 0.4	17 9 9.16
4	186	102 56 6.6	55 31.3	143.01	+ 0.48	0.0072148	− 0.5	17 5 13.25
5	187	103 53 19.2	52 43.7	143.03	0.53	0.0072126	1.5	17 1 17.33
6	188	104 50 32.1	49 56.4	143.04	0.55	0.0072079	2.5	16 57 21.42
7	189	105 47 45.3	47 9.4	143.06	+ 0.53	0.0072008	− 3.5	16 53 25.51
8	190	106 44 58.8	44 22.7	143.07	0.48	0.0071912	4.6	16 49 29.60
9	191	107 42 12.6	41 36.3	143.09	0.41	0.0071789	5.6	16 45 33.68
10	192	108 39 26.9	38 50.4	143.10	+ 0.32	0.0071641	− 6.7	16 41 37.77
11	193	109 36 41.2	36 4.6	143.10	0.20	0.0071465	7.9	16 37 41.86
12	194	110 33 55.8	33 19.0	143.11	+ 0.08	0.0071263	9.0	16 33 45.95
13	195	111 31 10.6	30 33.7	143.12	− 0.05	0.0071036	−10.0	16 29 50.04
14	196	112 28 25.7	27 48.6	143.13	0.18	0.0070783	11.0	16 25 54.12
15	197	113 25 40.8	25 3.5	143.14	0.30	0.0070507	12.0	16 21 58.21
16	198	114 22 56.2	22 18.7	143.14	− 0.41	0.0070208	−12.9	16 18 2.30
17	199	115 20 11.7	19 34.1	143.15	0.49	0.0069887	13.8	16 14 6.39
18	200	116 17 27.5	16 49.7	143.16	0.55	0.0069546	14.6	16 10 10.47
19	201	117 14 43.4	14 5.6	143.17	− 0.58	0.0069185	−15.4	16 6 14.56
20	202	118 11 59.6	11 21.6	143.18	0.58	0.0068808	16.1	16 2 18.65
21	203	119 9 16.3	8 38.1	143.20	0.55	0.0068413	16.7	15 58 22.74
22	204	120 6 33.2	5 54.9	143.22	− 0.49	0.0068005	−17.3	15 54 26.83
23	205	121 3 50.6	3 12.2	143.24	0.40	0.0067581	17.9	15 50 30.92
24	206	122 1 8.7	0 30.1	143.26	0.29	0.0067143	18.5	15 46 35.00
25	207	122 58 27.3	57 48.5	143.29	− 0.17	0.0066692	−19.1	15 42 39.09
26	208	123 55 46.7	55 7.7	143.32	− 0.04	0.0066228	19.6	15 38 43.18
27	209	124 53 7.0	52 27.8	143.36	+ 0.10	0.0065752	20.2	15 34 47.27
28	210	125 50 28.1	49 48.8	143.40	+ 0.23	0.0065262	−20.8	15 30 51.36
29	211	126 47 50.3	47 10.8	143.44	0.35	0.0064756	21.4	15 26 55.45
30	212	127 45 13.5	44 33.8	143.49	0.45	0.0064237	22.0	15 22 59.54
31	213	128 42 37.9	41 58.0	143.54	0.53	0.0063702	22.7	15 19 3.62
32	214	129 40 3.4	39 23.4	143.59	+ 0.58	0.0063151	−23.4	15 15 7.71

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 1^d.0.

Diff. for 1 Hour, —9^s.8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	° ′ ″	″	° ′ ″	″	h m	m	d
1	14 52.5	14 50.6	54 28.8	−0.69	54 21.7	−0.48	17 18.2	1.64	20.1
2	14 49.4	14 48.8	54 17.2	−0.27	54 15.2	−0.06	17 57.7	1.67	21.1
3	14 49.0	14 49.8	54 15.8	+0.16	54 19.0	+0.37	18 38.7	1.75	22.1
4	14 51.4	14 53.6	54 24.7	+0.58	54 32.8	+0.78	19 22.2	1.88	23.1
5	14 56.5	14 59.9	54 43.3	0.96	54 55.9	1.13	20 9.0	2.03	24.1
6	15 3.9	15 8.3	55 10.5	1.29	55 26.8	1.42	20 59.8	2.20	25.1
7	15 13.1	15 18.2	55 44.5	+1.53	56 3.4	+1.60	21 54.4	2.34	26.1
8	15 23.6	15 29.1	56 23.0	1.65	56 43.1	1.68	22 51.5	2.41	27.1
9	15 34.6	15 40.0	57 3.3	1.67	57 23.2	1.63	23 49.3	2.40	28.1
10	15 45.2	15 50.2	57 42.4	+1.56	58 0.6	+1.46	δ		29.1
11	15 54.8	15 59.0	58 17.5	1.35	58 32.9	1.21	0 45.9	2.31	0.7
12	16 2.7	16 5.9	58 46.5	1.05	58 58.2	0.89	1 40.0	2.20	1.7
13	16 8.5	16 10.5	59 7.8	+0.71	59 15.3	+0.55	2 31.4	2.09	2.7
14	16 12.0	16 13.0	59 20.8	0.38	59 24.4	+0.22	3 20.6	2.02	3.7
15	16 13.5	16 13.5	59 26.2	+0.06	59 26.2	−0.08	4 8.8	2.00	4.7
16	16 13.0	16 12.2	59 24.5	−0.20	59 21.4	−0.30	4 57.3	2.04	5.7
17	16 11.0	16 9.5	59 17.1	0.41	59 11.6	0.51	5 47.3	2.13	6.7
18	16 7.7	16 5.6	59 4.9	0.60	58 57.1	0.69	6 40.0	2.26	7.7
19	16 3.2	16 0.6	58 48.4	−0.77	58 38.7	−0.85	7 35.9	2.40	8.7
20	15 57.7	15 54.5	58 28.1	0.92	58 16.6	0.99	8 34.7	2.49	9.7
21	15 51.2	15 47.6	58 4.2	1.07	57 51.0	1.14	9 34.7	2.50	10.7
22	15 43.8	15 39.7	57 37.0	−1.20	57 22.2	−1.26	10 33.8	2.41	11.7
23	15 35.5	15 31.2	57 6.8	1.31	56 50.8	1.34	11 29.8	2.25	12.7
24	15 26.8	15 22.3	56 34.6	1.36	56 18.2	1.37	12 21.6	2.07	13.7
25	15 17.8	15 13.4	56 1.8	−1.35	55 45.7	−1.32	13 9.1	1.90	14.7
26	15 9.2	15 5.2	55 30.2	1.26	55 15.4	1.19	13 53.0	1.77	15.7
27	15 1.4	14 58.0	55 1.6	1.10	54 49.1	0.98	14 34.3	1.68	16.7
28	14 55.0	14 52.5	54 38.0	−0.85	54 28.7	−0.70	15 14.2	1.64	17.7
29	14 50.4	14 49.0	54 21.2	0.53	54 15.9	−0.35	15 53.7	1.65	18.7
30	14 48.2	14 47.9	54 12.8	−0.16	54 12.0	+0.04	16 33.9	1.71	19.7
31	14 48.4	14 49.6	54 13.7	+0.25	54 18.0	0.46	17 16.0	1.81	20.7
32	14 51.4	14 54.0	54 24.8	+0.68	54 34.2	+0.89	18 1.0	1.94	21.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 30 44.73	1.7617	S. 0 33 15.8	13.961
1	23 32 30.40	1.7607	0 19 18.3	13.956
2	23 34 16.02	1.7599	S. 0 5 21.1	13.951
3	23 36 1.59	1.7591	N. 0 8 35.8	13.945
4	23 37 47.11	1.7584	0 22 32.3	13.938
5	23 39 32.60	1.7578	0 36 28.3	13.930
6	23 41 18.05	1.7572	0 50 23.9	13.922
7	23 43 3.47	1.7568	1 4 19.0	13.913
8	23 44 48.87	1.7565	1 18 13.5	13.904
9	23 46 34.25	1.7562	1 32 7.5	13.894
10	23 48 19.61	1.7559	1 46 0.8	13.883
11	23 50 4.96	1.7558	1 59 53.4	13.872
12	23 51 50.30	1.7557	2 13 45.4	13.860
13	23 53 35.64	1.7557	2 27 36.6	13.847
14	23 55 20.99	1.7558	2 41 27.0	13.833
15	23 57 6.34	1.7559	2 55 16.6	13.820
16	23 58 51.70	1.7562	3 9 5.4	13.805
17	0 0 37.08	1.7565	3 22 53.2	13.789
18	0 2 22.48	1.7569	3 36 40.1	13.773
19	0 4 7.91	1.7574	3 50 26.0	13.757
20	0 5 53.37	1.7579	4 4 10.9	13.740
21	0 7 38.86	1.7585	4 17 54.8	13.722
22	0 9 24.39	1.7592	4 31 37.6	13.703
23	0 11 9.97	1.7600	N. 4 45 19.2	13.684

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 12 55.59	1.7608	N. 4 58 59.7	13.665
1	0 14 41.27	1.7618	5 12 39.0	13.644
2	0 16 27.01	1.7628	5 26 17.0	13.623
3	0 18 12.81	1.7638	5 39 53.7	13.601
4	0 19 58.67	1.7650	5 53 29.1	13.579
5	0 21 44.61	1.7663	6 7 3.2	13.557
6	0 23 30.63	1.7677	6 20 35.9	13.533
7	0 25 16.73	1.7690	6 34 7.2	13.508
8	0 27 2.91	1.7704	6 47 36.9	13.483
9	0 28 49.18	1.7719	7 1 5.1	13.458
10	0 30 35.54	1.7736	7 14 31.8	13.432
11	0 32 22.01	1.7753	7 27 56.9	13.405
12	0 34 8.58	1.7771	7 41 20.4	13.377
13	0 35 55.26	1.7789	7 54 42.2	13.349
14	0 37 42.05	1.7807	8 8 2.3	13.320
15	0 39 28.95	1.7828	8 21 20.6	13.291
16	0 41 15.98	1.7849	8 34 37.2	13.261
17	0 43 3.14	1.7870	8 47 51.9	13.229
18	0 44 50.42	1.7892	9 1 4.7	13.197
19	0 46 37.84	1.7915	9 14 15.6	13.165
20	0 48 25.40	1.7938	9 27 24.5	13.132
21	0 50 13.10	1.7962	9 40 31.5	13.099
22	0 52 0.95	1.7987	9 53 36.4	13.064
23	0 53 48.95	1.8013	10 6 39.2	13.029
24	0 55 37.11	1.8040	N.10 19 39.9	12.993

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute	Declination.
	h m s	s	° ′ ″
0	0 55 37.11	1.8040	N.10 19 39.9
1	0 57 25.43	1.8068	10 32 38.4
2	0 59 13.92	1.8096	10 45 34.7
3	1 1 2.58	1.8124	10 58 28.8
4	1 2 51.41	1.8153	11 11 20.6
5	1 4 40.42	1.8183	11 24 10.0
6	1 6 29.61	1.8214	11 36 57.0
7	1 8 18.99	1.8246	11 49 41.6
8	1 10 8.56	1.8278	12 2 23.7
9	1 11 58.33	1.8312	12 15 3.3
10	1 13 48.30	1.8345	12 27 40.3
11	1 15 38.47	1.8379	12 40 14.7
12	1 17 28.84	1.8414	12 52 46.5
13	1 19 19.43	1.8450	13 5 15.6
14	1 21 10.24	1.8486	13 17 41.9
15	1 23 1.26	1.8523	13 30 5.4
16	1 24 52.51	1.8561	13 42 26.1
17	1 26 43.99	1.8600	13 54 43.9
18	1 28 35.71	1.8639	14 6 58.7
19	1 30 27.66	1.8678	14 19 10.5
20	1 32 19.85	1.8719	14 31 19.3
21	1 34 12.29	1.8761	14 43 25.1
22	1 36 4.98	1.8802	14 55 27.7
23	1 37 57.92	1.8844	N.15 7 27.1

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute	Declination.
0	1 39 51.11	1.8887	N.15 19 23.3
1	1 41 44.56	1.8931	15 31 16.2
2	1 43 38.28	1.8976	15 43 5.7
3	1 45 32.27	1.9021	15 54 51.9
4	1 47 26.53	1.9067	16 6 34.6
5	1 49 21.07	1.9113	16 18 13.8
6	1 51 15.88	1.9159	16 29 49.4
7	1 53 10.98	1.9207	16 41 21.4
8	1 55 6.37	1.9255	16 52 49.8
9	1 57 2.04	1.9303	17 4 14.5
10	1 58 58.00	1.9352	17 15 35.4
11	2 0 54.26	1.9402	17 26 52.4
12	2 2 50.83	1.9453	17 38 5.6
13	2 4 47.70	1.9504	17 49 14.9
14	2 6 44.88	1.9555	18 0 20.1
15	2 8 42.36	1.9607	18 11 21.3
16	2 10 40.16	1.9660	18 22 18.4
17	2 12 38.28	1.9713	18 33 11.3
18	2 14 36.71	1.9766	18 43 59.9
19	2 16 35.47	1.9821	18 54 44.3
20	2 18 34.56	1.9875	19 5 24.4
21	2 20 33.97	1.9929	19 16 0.0
22	2 22 33.71	1.9985	19 26 31.2
23	2 24 33.79	2.0042	19 36 57.8
24	2 26 34.21	2.0098	N.19 47 19.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
h m s	s	° ′ ″	″
2 26 34.21	2.0098	N.19 47 19.8	10.327
2 28 34.97	2.0155	19 57 37.1	10.250
2 30 36.07	2.0212	20 7 49.8	10.172
2 32 37.51	2.0269	20 17 57.7	10.091
2 34 39.30	2.0327	20 28 0.7	10.009
2 36 41.44	2.0386	20 37 58.8	9.927
2 38 43.93	2.0445	20 47 52.0	9.844
2 40 46.78	2.0504	20 57 40.1	9.759
2 42 49.98	2.0563	21 7 23.1	9.673
2 44 53.54	2.0623	21 17 0.9	9.587
2 46 57.46	2.0684	21 26 33.5	9.499
2 49 1.75	2.0745	21 36 0.8	9.410
2 51 6.40	2.0805	21 45 22.7	9.320
2 53 11.41	2.0866	21 54 39.2	9.229
2 55 16.79	2.0927	22 3 50.2	9.137
2 57 22.54	2.0989	22 12 55.7	9.044
2 59 28.66	2.1051	22 21 55.5	8.949
3 1 35.15	2.1113	22 30 49.6	8.853
3 3 42.02	2.1176	22 39 37.9	8.757
3 5 49.26	2.1238	22 48 20.4	8.659
3 7 56.87	2.1300	22 56 57.0	8.560
3 10 4.86	2.1363	23 5 27.6	8.460
3 12 13.23	2.1426	23 13 52.2	8.358
3 14 21.97	2.1488	N.23 22 10.6	8.255

MONDAY 6.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
3 16 31.09	2.1552	N.23 30 22.8	8.152
3 18 40.59	2.1615	23 38 28.8	8.047
3 20 50.47	2.1677	23 46 28.4	7.940
3 23 0.72	2.1740	23 54 21.6	7.833
3 25 11.35	2.1803	24 2 8.4	7.725
3 27 22.36	2.1867	24 9 48.6	7.615
3 29 33.75	2.1930	24 17 22.2	7.504
3 31 45.52	2.1992	24 24 49.1	7.392
3 33 57.66	2.2055	24 32 9.3	7.279
3 36 10.18	2.2118	24 39 22.6	7.164
3 38 23.08	2.2181	24 46 29.0	7.049
3 40 36.35	2.2243	24 53 28.5	6.932
3 42 50.00	2.2306	25 0 20.9	6.814
3 45 4.02	2.2368	25 7 6.2	6.695
3 47 18.41	2.2429	25 13 44.3	6.574
3 49 33.17	2.2491	25 20 15.1	6.452
3 51 48.30	2.2552	25 26 38.6	6.330
3 54 3.80	2.2613	25 32 54.7	6.207
3 56 19.66	2.2674	25 39 3.4	6.082
3 58 35.89	2.2734	25 45 4.5	5.955
4 0 52.47	2.2793	25 50 58.0	5.827
4 3 9.41	2.2853	25 56 43.8	5.698
4 5 26.71	2.2912	26 2 21.8	5.569
4 7 44.36	2.2971	26 7 52.1	5.439
4 10 2.36	2.3029	N.26 13 14.5	5.307

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	4 10 2.36	2.3029	N.26 13 14.5	5.307
1	4 12 20.71	2.3087	26 18 29.0	5.174
2	4 14 39.40	2.3144	26 23 35.4	5.039
3	4 16 58.44	2.3201	26 28 33.7	4.903
4	4 19 17.81	2.3257	26 33 23.8	4.767
5	4 21 37.52	2.3313	26 38 5.8	4.631
6	4 23 57.56	2.3368	26 42 39.5	4.492
7	4 26 17.93	2.3422	26 47 4.8	4.352
8	4 28 38.62	2.3475	26 51 21.7	4.212
9	4 30 59.63	2.3527	26 55 30.2	4.070
10	4 33 20.95	2.3579	26 59 30.1	3.927
11	4 35 42.58	2.3631	27 3 21.4	3.782
12	4 38 4.52	2.3682	27 7 4.0	3.637
13	4 40 26.76	2.3732	27 10 37.9	3.492
14	4 42 49.30	2.3780	27 14 3.0	3.345
15	4 45 12.12	2.3828	27 17 19.3	3.197
16	4 47 35.23	2.3875	27 20 26.7	3.048
17	4 49 58.62	2.3922	27 23 25.1	2.898
18	4 52 22.29	2.3968	27 26 14.5	2.748
19	4 54 46.23	2.4012	27 28 54.9	2.596
20	4 57 10.43	2.4054	27 31 26.1	2.443
21	4 59 34.88	2.4097	27 33 48.1	2.290
22	5 1 59.59	2.4139	27 36 0.9	2.137
23	5 4 24.55	2.4179	N.27 38 4.5	1.982

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	5 6 49.74	2.4218	N.27 39 58.7	1.825
1	5 9 15.17	2.4257	27 41 43.5	1.669
2	5 11 40.83	2.4294	27 43 19.0	1.512
3	5 14 6.70	2.4329	27 44 45.0	1.354
4	5 16 32.78	2.4364	27 46 1.5	1.195
5	5 18 59.07	2.4399	27 47 8.4	1.035
6	5 21 25.57	2.4432	27 48 5.7	0.875
7	5 23 52.26	2.4463	27 48 53.4	0.714
8	5 26 19.13	2.4493	27 49 31.4	0.553
9	5 28 46.18	2.4522	27 49 59.7	0.391
10	5 31 13.40	2.4551	27 50 18.3	0.228
11	5 33 40.79	2.4578	27 50 27.1	+ 0.065
12	5 36 8.34	2.4604	27 50 26.1	− 0.099
13	5 38 36.04	2.4628	27 50 15.2	0.263
14	5 41 3.88	2.4651	27 49 54.5	0.428
15	5 43 31.85	2.4672	27 49 23.9	0.593
16	5 45 59.95	2.4693	27 48 43.3	0.759
17	5 48 28.17	2.4712	27 47 52.8	0.924
18	5 50 56.50	2.4730	27 46 52.4	1.090
19	5 53 24.93	2.4747	27 45 42.0	1.257
20	5 55 53.46	2.4763	27 44 21.6	1.424
21	5 58 22.08	2.4777	27 42 51.1	1.592
22	6 0 50.78	2.4789	27 41 10.6	1.759
23	6 3 19.55	2.4801	27 39 20.0	1.927
24	6 5 48.39	2.4812	N.27 37 19.4	2.094

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	6	5	48.39	2.4812	N.27	37	19.4	2.094
1	6	8	17.29	2.4820	27	35	8.7	2.262
2	6	10	46.23	2.4827	27	32	47.9	2.430
3	6	13	15.21	2.4833	27	30	17.1	2.598
4	6	15	44.23	2.4838	27	27	36.2	2.767
5	6	18	13.27	2.4842	27	24	45.1	2.936
6	6	20	42.33	2.4814	27	21	43.9	3.104
7	6	23	11.40	2.4845	27	18	32.6	3.272
8	6	25	40.47	2.4845	27	15	11.3	3.439
9	6	28	9.54	2.4843	27	11	39.9	3.607
10	6	30	38.59	2.4840	27	7	58.4	3.776
11	6	33	7.62	2.4837	27	4	6.8	3.944
12	6	35	36.63	2.4832	27	0	5.1	4.112
13	6	38	5.60	2.4824	26	55	53.4	4.279
14	6	40	34.52	2.4816	26	51	31.7	4.446
15	6	43	3.39	2.4807	26	46	59.9	4.613
16	6	45	32.21	2.4797	26	42	18.1	4.779
17	6	48	0.96	2.4785	26	37	26.4	4.945
18	6	50	29.63	2.4772	26	32	24.7	5.111
19	6	52	58.22	2.4758	26	27	13.1	5.276
20	6	55	26.73	2.4743	26	21	51.6	5.442
21	6	57	55.14	2.4727	26	16	20.1	5.607
22	7	0	23.45	2.4710	26	10	38.8	5.770
23	7	2	51.66	2.4692	N.26	4	47.7	5.934

FRIDAY 10.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
0	7	5	19.75	2.4672	N.25	58	46.7	6.097
1	7	7	47.72	2.4651	25	52	36.0	6.259
2	7	10	15.56	2.4629	25	46	15.6	6.421
3	7	12	43.27	2.4607	25	39	45.5	6.582
4	7	15	10.84	2.4583	25	33	5.7	6.743
5	7	17	38.27	2.4558	25	26	16.3	6.903
6	7	20	5.54	2.4532	25	19	17.4	7.062
7	7	22	32.65	2.4505	25	12	8.9	7.220
8	7	24	59.60	2.4478	25	4	51.0	7.378
9	7	27	26.39	2.4450	24	57	23.6	7.535
10	7	29	53.00	2.4420	24	49	46.8	7.691
11	7	32	19.43	2.4390	24	42	0.7	7.846
12	7	34	45.68	2.4359	24	34	5.3	8.001
13	7	37	11.74	2.4327	24	26	0.6	8.154
14	7	39	37.60	2.4294	24	17	46.8	8.306
15	7	42	3.27	2.4261	24	9	23.9	8.457
16	7	44	28.74	2.4227	24	0	51.9	8.608
17	7	46	54.00	2.4192	23	52	10.9	8.757
18	7	49	19.05	2.4157	23	43	21.0	8.906
19	7	51	43.88	2.4121	23	34	22.2	9.053
20	7	54	8.50	2.4084	23	25	14.6	9.200
21	7	56	32.89	2.4046	23	15	58.2	9.346
22	7	58	57.05	2.4008	23	6	33.1	9.490
23	8	1	20.99	2.3971	22	56	59.4	9.632
24	8	3	44.70	2.3932	N.22	47	17.2	9.774

SATURDAY 11.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.		
	h	m	s	s	°	′	″
0	8	3	44.70	2.3932	N.22	47	17.2
1	8	6	8.17	2.3892	22	37	26.5
2	8	8	31.40	2.3852	22	27	27.4
3	8	10	54.39	2.3811	22	17	19.9
4	8	13	17.13	2.3770	22	7	4.1
5	8	15	39.63	2.3729	21	56	40.2
6	8	18	1.88	2.3688	21	46	8.1
7	8	20	23.88	2.3646	21	35	28.0
8	8	22	45.63	2.3603	21	24	39.9
9	8	25	7.12	2.3561	21	13	43.9
10	8	27	28.36	2.3518	21	2	40.1
11	8	29	49.34	2.3475	20	51	28.5
12	8	32	10.06	2.3432	20	40	9.3
13	8	34	30.52	2.3388	20	28	42.5
14	8	36	50.72	2.3345	20	17	8.2
15	8	39	10.66	2.3301	20	5	26.5
16	8	41	30.33	2.3257	19	53	37.4
17	8	43	49.74	2.3213	19	41	41.1
18	8	46	8.89	2.3169	19	29	37.6
19	8	48	27.77	2.3125	19	17	27.1
20	8	50	46.39	2.3082	19	5	9.5
21	8	53	4.75	2.3038	18	52	45.0
22	8	55	22.84	2.2993	18	40	13.7
23	8	57	40.67	2.2949	N.18	27	35.7

SUNDAY 12.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.		
0	8	59	58.23	2.2905	N.18	14	51.0
1	9	2	15.53	2.2862	18	1	59.8
2	9	4	32.57	2.2818	17	49	2.1
3	9	6	49.35	2.2775	17	35	58.0
4	9	9	5.87	2.2732	17	22	47.6
5	9	11	22.13	2.2688	17	9	31.0
6	9	13	38.13	2.2646	16	56	8.3
7	9	15	53.88	2.2603	16	42	39.6
8	9	18	9.37	2.2561	16	29	5.0
9	9	20	24.61	2.2518	16	15	24.5
10	9	22	39.59	2.2477	16	1	38.3
11	9	24	54.33	2.2436	15	47	46.4
12	9	27	8.82	2.2394	15	33	48.9
13	9	29	23.06	2.2353	15	19	45.9
14	9	31	37.06	2.2313	15	5	37.6
15	9	33	50.82	2.2273	14	51	24.0
16	9	36	4.34	2.2233	14	37	5.2
17	9	38	17.62	2.2194	14	22	41.3
18	9	40	30.67	2.2156	14	8	12.4
19	9	42	43.49	2.2117	13	53	38.6
20	9	44	56.08	2.2079	13	38	59.9
21	9	47	8.44	2.2042	13	24	16.5
22	9	49	20.58	2.2005	13	9	28.5
23	9	51	32.50	2.1968	12	54	35.9
24	9	53	44.20	2.1932	N.12	39	38.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 13.					WEDNESDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 53 44.20	2.1932	N.12 39 38.9	14.987	0	11 36 8.00	2.1025	S. 0 14 34.3	16.679
1	9 55 55.69	2.1897	12 24 37.5	15.058	1	11 38 14.15	2.1026	0 31 15.0	16.677
2	9 58 6.97	2.1862	12 9 31.9	15.128	2	11 40 20.31	2.1027	0 47 55.6	16.674
3	10 0 18.04	2.1827	11 54 22.1	15.197	3	11 42 26.48	2.1030	1 4 35.9	16.668
4	10 2 28.90	2.1794	11 39 8.2	15.264	4	11 44 32.67	2.1033	1 21 15.8	16.662
5	10 4 39.57	2.1762	11 23 50.4	15.329	5	11 46 38.88	2.1037	1 37 55.3	16.653
6	10 6 50.04	2.1729	11 8 28.7	15.393	6	11 48 45.12	2.1042	1 54 34.2	16.643
7	10 9 0.31	2.1697	10 53 3.2	15.456	7	11 50 51.39	2.1048	2 11 12.5	16.632
8	10 11 10.40	2.1666	10 37 34.0	15.517	8	11 52 57.70	2.1056	2 27 50.1	16.619
9	10 13 20.30	2.1635	10 22 1.2	15.576	9	11 55 4.06	2.1064	2 44 26.8	16.605
10	10 15 30.02	2.1605	10 6 24.9	15.634	10	11 57 10.47	2.1072	3 1 2.7	16.590
11	10 17 39.56	2.1576	9 50 45.1	15.691	11	11 59 16.93	2.1082	3 17 37.6	16.572
12	10 19 48.93	2.1547	9 35 2.0	15.745	12	12 1 23.45	2.1092	3 34 11.4	16.553
13	10 21 58.13	2.1519	9 19 15.7	15.798	13	12 3 30.03	2.1104	3 50 44.0	16.533
14	10 24 7.16	2.1492	9 3 26.3	15.849	14	12 5 36.69	2.1116	4 7 15.4	16.512
15	10 26 16.03	2.1466	8 47 33.8	15.899	15	12 7 43.42	2.1128	4 23 45.4	16.488
16	10 28 24.75	2.1440	8 31 38.4	15.947	16	12 9 50.23	2.1142	4 40 14.0	16.464
17	10 30 33.31	2.1414	8 15 40.1	15.994	17	12 11 57.13	2.1157	4 56 41.1	16.437
18	10 32 41.72	2.1390	7 59 39.1	16.039	18	12 14 4.11	2.1172	5 13 6.5	16.409
19	10 34 49.99	2.1367	7 43 35.4	16.083	19	12 16 11.19	2.1188	5 29 30.2	16.380
20	10 36 58.12	2.1343	7 27 29.1	16.125	20	12 18 18.37	2.1206	5 45 52.1	16.350
21	10 39 6.11	2.1321	7 11 20.4	16.165	21	12 20 25.66	2.1224	6 2 12.2	16.318
22	10 41 13.97	2.1299	6 55 9.3	16.204	22	12 22 33.06	2.1242	6 18 30.3	16.284
23	10 43 21.70	2.1278	N. 6 38 55.9	16.242	23	12 24 40.57	2.1262	S. 6 34 46.3	16.248
	TUESDAY 14.					THURSDAY 16.			
0	10 45 29.31	2.1258	N. 6 22 40.3	16.277	0	12 26 48.20	2.1282	S. 6 51 0.1	16.212
1	10 47 36.80	2.1239	6 6 22.6	16.312	1	12 28 55.96	2.1304	7 7 11.7	16.174
2	10 49 44.18	2.1222	5 50 2.9	16.345	2	12 31 3.85	2.1327	7 23 21.0	16.134
3	10 51 51.46	2.1204	5 33 41.2	16.377	3	12 33 11.88	2.1350	7 39 27.8	16.093
4	10 53 58.63	2.1188	5 17 17.7	16.406	4	12 35 20.05	2.1374	7 55 32.1	16.051
5	10 56 5.71	2.1172	5 0 52.5	16.433	5	12 37 28.37	2.1398	8 11 33.9	16.007
6	10 58 12.69	2.1156	4 44 25.7	16.460	6	12 39 36.83	2.1424	8 27 32.9	15.960
7	11 0 19.58	2.1142	4 27 57.3	16.485	7	12 41 45.45	2.1450	8 43 29.1	15.913
8	11 2 26.39	2.1128	4 11 27.5	16.508	8	12 43 54.23	2.1476	8 59 22.5	15.865
9	11 4 33.12	2.1116	3 54 56.3	16.531	9	12 46 3.17	2.1504	9 15 12.9	15.815
10	11 6 39.78	2.1104	3 38 23.8	16.552	10	12 48 12.28	2.1533	9 31 0.3	15.763
11	11 8 46.37	2.1092	3 21 50.1	16.571	11	12 50 21.57	2.1563	9 46 44.5	15.710
12	11 10 52.89	2.1082	3 5 15.3	16.588	12	12 52 31.04	2.1593	10 2 25.5	15.656
13	11 12 59.35	2.1072	2 48 39.5	16.604	13	12 54 40.69	2.1624	10 18 3.2	15.599
14	11 15 5.76	2.1064	2 32 2.8	16.618	14	12 56 50.53	2.1656	10 33 37.4	15.541
15	11 17 12.12	2.1057	2 15 25.3	16.632	15	12 59 0.56	2.1688	10 49 8.1	15.482
16	11 19 18.44	2.1050	1 58 47.0	16.643	16	13 1 10.79	2.1722	11 4 35.2	15.422
17	11 21 24.72	2.1043	1 42 8.1	16.652	17	13 3 21.22	2.1755	11 19 58.7	15.360
	11 23 30.96	2.1038	1 25 28.7	16.661	18	13 5 31.85	2.1789	11 35 18.4	15.296
	11 25 37.18	2.1034	1 8 48.8	16.668	19	13 7 42.69	2.1825	11 50 34.2	15.230
	11 27 43.37	2.1030	0 52 8.5	16.673	20	13 9 53.75	2.1862	12 5 46.0	15.163
	11 29 49.54	2.1027	0 35 28.0	16.677	21	13 12 5.03	2.1898	12 20 53.8	15.096
	11 31 55.70	2.1026	0 18 47.3	16.679	22	13 14 16.53	2.1936	12 35 57.5	15.026
	11 34 1.85	2.1025	N. 0 2 6.5	16.680	23	13 16 28.26	2.1974	12 50 56.9	14.954
	11 36 8.00	2.1025	S. 0 14 34.3	16.679	24	13 18 40.22	2.2013	S.13 5 52.0	14.881

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 17.					SUNDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 18 40.22	2.2013	S.13 5 52.0	14.881	0	15 9 40.50	2.4325	S.23 7 42.2	9.629
1	13 20 52.42	2.2052	13 20 42.6	14.807	1	15 12 6.60	2.4374	23 17 15.6	9.485
2	13 23 4.85	2.2092	13 35 28.8	14.732	2	15 14 32.99	2.4422	23 26 40.4	9.340
3	13 25 17.52	2.2132	13 50 10.4	14.654	3	15 16 59.66	2.4469	23 35 56.4	9.193
4	13 27 30.43	2.2173	14 4 47.3	14.575	4	15 19 26.62	2.4517	23 45 3.6	9.045
5	13 29 43.60	2.2216	14 19 19.4	14.495	5	15 21 53.86	2.4564	23 54 1.8	8.895
6	13 31 57.02	2.2258	14 33 46.7	14.413	6	15 24 21.39	2.4611	24 2 51.0	8.745
7	13 34 10.69	2.2301	14 48 9.0	14.329	7	15 26 49.19	2.4657	24 11 31.2	8.593
8	13 36 24.63	2.2345	15 2 26.2	14.244	8	15 29 17.27	2.4702	24 20 2.2	8.440
9	13 38 38.83	2.2389	15 16 38.3	14.158	9	15 31 45.61	2.4746	24 28 24.0	8.287
10	13 40 53.30	2.2433	15 30 45.2	14.071	10	15 34 14.22	2.4790	24 36 36.6	8.132
11	13 43 8.03	2.2478	15 44 46.8	13.981	11	15 36 43.09	2.4833	24 44 39.8	7.975
12	13 45 23.03	2.2523	15 58 42.9	13.889	12	15 39 12.22	2.4876	24 52 33.6	7.817
13	13 47 38.31	2.2570	16 12 33.5	13.797	13	15 41 41.60	2.4917	25 0 17.9	7.659
14	13 49 53.87	2.2617	16 26 18.5	13.703	14	15 44 11.23	2.4958	25 7 52.7	7.500
15	13 52 9.71	2.2663	16 39 57.9	13.608	15	15 46 41.10	2.4998	25 15 17.9	7.339
16	13 54 25.83	2.2711	16 53 31.5	13.511	16	15 49 11.21	2.5038	25 22 33.4	7.177
17	13 56 42.24	2.2759	17 6 59.2	13.412	17	15 51 41.56	2.5077	25 29 39.2	7.015
18	13 58 58.94	2.2807	17 20 20.9	13.312	18	15 54 12.13	2.5114	25 36 35.2	6.852
19	14 1 15.93	2.2856	17 33 36.6	13.211	19	15 56 42.92	2.5150	25 43 21.4	6.687
20	14 3 33.21	2.2904	17 46 46.2	13.107	20	15 59 13.93	2.5186	25 49 57.7	6.522
21	14 5 50.78	2.2953	17 59 49.5	13.002	21	16 1 45.15	2.5220	25 56 24.0	6.355
22	14 8 8.65	2.3003	18 12 46.5	12.897	22	16 4 16.57	2.5253	26 2 40.3	6.187
23	14 10 26.82	2.3053	S.18 25 37.1	12.789	23	16 6 48.19	2.5286	S.26 8 46.5	6.020
	SATURDAY 18.					MONDAY 20.			
0	14 12 45.29	2.3103	S.18 38 21.2	12.680	0	16 9 20.01	2.5318	S.26 14 42.7	5.852
1	14 15 4.06	2.3154	18 50 58.7	12.569	1	16 11 52.01	2.5348	26 20 28.7	5.682
2	14 17 23.14	2.3205	19 3 29.5	12.457	2	16 14 24.19	2.5378	26 26 4.5	5.512
3	14 19 42.52	2.3255	19 15 53.6	12.344	3	16 16 56.55	2.5407	26 31 30.1	5.341
4	14 22 2.20	2.3306	19 28 10.8	12.229	4	16 19 29.07	2.5433	26 36 45.4	5.169
5	14 24 22.19	2.3357	19 40 21.1	12.113	5	16 22 1.75	2.5458	26 41 50.3	4.996
6	14 26 42.49	2.3409	19 52 24.4	11.996	6	16 24 34.57	2.5483	26 46 44.9	4.823
7	14 29 3.10	2.3461	20 4 20.6	11.876	7	16 27 7.54	2.5507	26 51 29.1	4.649
8	14 31 24.02	2.3512	20 16 9.5	11.754	8	16 29 40.65	2.5529	26 56 2.8	4.475
9	14 33 45.24	2.3563	20 27 51.1	11.632	9	16 32 13.89	2.5550	27 0 26.1	4.301
10	14 36 6.77	2.3614	20 39 25.3	11.508	10	16 34 47.25	2.5569	27 4 38.9	4.125
11	14 38 28.61	2.3666	20 50 52.1	11.383	11	16 37 20.72	2.5588	27 8 41.1	3.949
12	14 40 50.77	2.3718	21 2 11.3	11.257	12	16 39 54.30	2.5605	27 12 32.8	3.773
13	14 43 13.23	2.3769	21 13 22.9	11.129	13	16 42 27.98	2.5620	27 16 13.9	3.597
14	14 45 36.00	2.3821	21 24 26.8	10.999	14	16 45 1.74	2.5633	27 19 44.4	3.419
15	14 47 59.08	2.3872	21 35 22.8	10.868	15	16 47 35.58	2.5646	27 23 4.2	3.242
16	14 50 22.47	2.3923	21 46 10.9	10.736	16	16 50 9.49	2.5657	27 26 13.4	3.064
17	14 52 46.16	2.3974	21 56 51.1	10.603	17	16 52 43.47	2.5668	27 29 11.9	2.886
18	14 55 10.16	2.4025	22 7 23.3	10.468	18	16 55 17.51	2.5677	27 31 59.7	2.707
19	14 57 34.46	2.4076	22 17 47.3	10.332	19	16 57 51.59	2.5683	27 34 36.8	2.529
20	14 59 59.07	2.4127	22 28 3.1	10.193	20	17 0 25.71	2.5689	27 37 3.2	2.350
21	15 2 23.98	2.4177	22 38 10.5	10.054	21	17 2 59.86	2.5693	27 39 18.8	2.171
22	15 4 49.19	2.4227	22 48 9.6	9.914	22	17 5 34.03	2.5696	27 41 23.7	1.992
23	15 7 14.70	2.4276	22 58 0.2	9.772	23	17 8 8.21	2.5697	27 43 17.9	1.814
24	15 9 40.50	2.4325	S.23 7 42.2	9.629	24	17 10 42.40	2.5697	S.27 45 1.4	1.635

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right scension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.			
m s	s	° ′ ″	″		h m s	s	° ′ ″	″
10 42.40	2.5697	S.27 45 1.4	1.635	0	19 11 17.52	2.4060	S.25 44 19.0	6.373
13 16.58	2.5695	27 46 34.1	1.456	1	19 13 41.70	2.3999	25 37 52.3	6.517
15 50.74	2.5692	27 47 56.1	1.277	2	19 16 5.51	2.3937	25 31 17.0	6.659
18 24.88	2.5687	27 49 7.3	1.097	3	19 18 28.95	2.3875	25 24 33.2	6.799
20 58.99	2.5681	27 50 7.8	0.918	4	19 20 52.01	2.3813	25 17 41.1	6.938
23 33.05	2.5673	27 50 57.5	0.739	5	19 23 14.70	2.3750	25 10 40.7	7.076
26 7.06	2.5663	27 51 36.5	0.561	6	19 25 37.01	2.3686	25 3 32.0	7.212
28 41.01	2.5653	27 52 4.8	0.382	7	19 27 58.93	2.3621	24 56 15.2	7.347
31 14.89	2.5641	27 52 22.4	0.204	8	19 30 20.46	2.3557	24 48 50.3	7.481
33 48.70	2.5627	27 52 29.3	– 0.026	9	19 32 41.61	2.3492	24 41 17.5	7.613
36 22.42	2.5612	27 52 25.5	+ 0.152	10	19 35 2.36	2.3425	24 33 36.8	7.744
38 56.04	2.5595	27 52 11.1	0.329	11	19 37 22.71	2.3358	24 25 48.2	7.874
41 29.56	2.5577	27 51 46.1	0.506	12	19 39 42.66	2.3292	24 17 51.9	8.002
44 2.96	2.5557	27 51 10.4	0.682	13	19 42 2.21	2.3225	24 9 48.0	8.128
46 36.24	2.5536	27 50 24.2	0.858	14	19 44 21.36	2.3158	24 1 36.5	8.253
49 9.39	2.5513	27 49 27.4	1.034	15	19 46 40.11	2.3091	23 53 17.6	8.377
51 42.40	2.5489	27 48 20.1	1.209	16	19 48 58.45	2.3023	23 44 51.3	8.499
54 15.26	2.5463	27 47 2.3	1.383	17	19 51 16.38	2.2955	23 36 17.7	8.619
56 47.96	2.5436	27 45 34.1	1.557	18	19 53 33.91	2.2887	23 27 37.0	8.738
59 20.49	2.5407	27 43 55.4	1.731	19	19 55 51.03	2.2818	23 18 49.2	8.856
1 52.85	2.5378	27 42 6.4	1.904	20	19 58 7.73	2.2749	23 9 54.3	8.973
4 25.03	2.5347	27 40 7.0	2.076	21	20 0 24.02	2.2681	23 0 52.4	9.088
6 57.02	2.5315	27 37 57.3	2.247	22	20 2 39.90	2.2612	22 51 43.7	9.202
9 28.81	2.5281	S.27 35 37.3	2.418	23	20 4 55.36	2.2542	S.22 42 28.2	9.313
WEDNESDAY 22.					FRIDAY 24.			
12 0.39	2.5246	S.27 33 7.1	2.588	0	20 7 10.41	2.2473	S.22 33 6.1	9.423
14 31.76	2.5209	27 30 26.7	2.757	1	20 9 25.05	2.2405	22 23 37.4	9.532
17 2.90	2.5171	27 27 36.2	2.926	2	20 11 39.27	2.2336	22 14 2.2	9.640
19 33.81	2.5132	27 24 35.6	3.094	3	20 13 53.08	2.2267	22 4 20.6	9.747
22 4.48	2.5091	27 21 24.9	3.261	4	20 16 6.47	2.2197	21 54 32.6	9.852
24 34.90	2.5050	27 18 4.3	3.426	5	20 18 19.45	2.2128	21 44 38.4	9.954
27 5.08	2.5008	27 14 33.8	3.591	6	20 20 32.01	2.2059	21 34 38.1	10.056
29 35.00	2.4964	27 10 53.4	3.755	7	20 22 44.16	2.1991	21 24 31.7	10.157
32 4.65	2.4918	27 7 3.2	3.917	8	20 24 55.90	2.1922	21 14 19.3	10.255
34 34.02	2.4872	27 3 3.3	4.079	9	20 27 7.22	2.1853	21 4 1.1	10.352
37 3.11	2.4825	26 58 53.7	4.241	10	20 29 18.13	2.1785	20 53 37.1	10.448
39 31.92	2.4777	26 54 34.4	4.401	11	20 31 28.64	2.1717	20 43 7.3	10.543
42 0.43	2.4727	26 50 5.6	4.559	12	20 33 38.74	2.1649	20 32 31.9	10.636
44 28.64	2.4677	26 45 27.3	4.717	13	20 35 48.43	2.1581	20 21 51.0	10.727
46 56.55	2.4625	26 40 39.6	4.873	14	20 37 57.71	2.1513	20 11 4.6	10.817
49 24.14	2.4572	26 35 42.5	5.029	15	20 40 6.59	2.1446	20 0 12.9	10.906
51 51.41	2.4518	26 30 36.1	5.183	16	20 42 15.07	2.1379	19 49 15.9	10.993
54 18.36	2.4464	26 25 20.5	5.337	17	20 44 23.14	2.1312	19 38 13.7	11.079
56 44.98	2.4408	26 19 55.7	5.489	18	20 46 30.81	2.1245	19 27 6.4	11.163
59 11.26	2.4353	26 14 21.8	5.639	19	20 48 38.08	2.1179	19 15 54.1	11.247
1 37.21	2.4297	26 8 39.0	5.788	20	20 50 44.96	2.1114	19 4 36.8	11.328
4 2.82	2.4239	26 2 47.2	5.937	21	20 52 51.45	2.1048	18 53 14.7	11.408
6 28.08	2.4180	25 56 46.5	6.084	22	20 54 57.54	2.0983	18 41 47.8	11.487
8 52.98	2.4120	25 50 37.1	6.229	23	20 57 3.25	2.0919	18 30 16.2	11.564
11 17.52	2.4060	S.25 44 19.0	6.373	24	20 59 8.57	2.0855	S.18 18 40.1	11.640

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 25.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.				Diff. for 1 Minute.
	h	m	s	s		°	′	″	″
0	20	59	8.57	2.0855	S.	18	18	40.1	11.640
1	21	1	13.51	2.0791		18	6	59.4	11.715
2	21	3	18.06	2.0727		17	55	14.3	11.788
3	21	5	22.23	2.0664		17	43	24.8	11.861
4	21	7	26.03	2.0602		17	31	31.0	11.932
5	21	9	29.45	2.0539		17	19	33.0	12.001
6	21	11	32.50	2.0478		17	7	30.9	12.068
7	21	13	35.18	2.0417		16	55	24.8	12.135
8	21	15	37.50	2.0356		16	43	14.7	12.201
9	21	17	39.45	2.0295		16	31	0.7	12.265
10	21	19	41.04	2.0236		16	18	42.9	12.327
11	21	21	42.28	2.0177		16	6	21.4	12.389
12	21	23	43.17	2.0119		15	53	56.2	12.450
13	21	25	43.71	2.0061		15	41	27.4	12.508
14	21	27	43.90	2.0003		15	28	55.2	12.566
15	21	29	43.74	1.9946		15	16	19.5	12.623
16	21	31	43.25	1.9891		15	3	40.4	12.678
17	21	33	42.43	1.9835		14	50	58.1	12.732
18	21	35	41.27	1.9779		14	38	12.6	12.784
19	21	37	39.78	1.9725		14	25	24.0	12.836
20	21	39	37.97	1.9672		14	12	32.3	12.887
21	21	41	35.84	1.9619		13	59	37.6	12.936
22	21	43	33.39	1.9566		13	46	40.0	12.984
23	21	45	30.63	1.9513	S.	13	33	39.5	13.032

SUNDAY 26.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.				Diff. for 1 Minute.
	h	m	s	s		°	′	″	″
0	21	47	27.55	1.9462	S.	13	20	36.2	13.077
1	21	49	24.17	1.9412		13	7	30.2	13.122
2	21	51	20.49	1.9362		12	54	21.6	13.165
3	21	53	16.51	1.9313		12	41	10.4	13.207
4	21	55	12.24	1.9264		12	27	56.7	13.248
5	21	57	7.68	1.9215		12	14	40.6	13.288
6	21	59	2.82	1.9167		12	1	22.1	13.327
7	22	0	57.68	1.9121		11	48	1.3	13.365
8	22	2	52.27	1.9075		11	34	38.3	13.402
9	22	4	46.58	1.9029		11	21	13.1	13.438
10	22	6	40.62	1.8985		11	7	45.8	13.473
11	22	8	34.40	1.8942		10	54	16.4	13.507
12	22	10	27.92	1.8899		10	40	45.0	13.539
13	22	12	21.18	1.8856		10	27	11.7	13.571
14	22	14	14.19	1.8813		10	13	36.5	13.601
15	22	16	6.94	1.8772		9	59	59.6	13.630
16	22	17	59.45	1.8732		9	46	20.9	13.659
17	22	19	51.72	1.8692		9	32	40.5	13.686
18	22	21	43.75	1.8652		9	18	58.6	13.712
19	22	23	35.55	1.8614		9	5	15.1	13.738
20	22	25	27.12	1.8577		8	51	30.0	13.763
21	22	27	18.47	1.8540		8	37	43.5	13.787
22	22	29	9.60	1.8503		8	23	55.6	13.809
23	22	31	0.51	1.8467		8	10	6.4	13.831
24	22	32	51.21	1.8133	S.	7	56	15.9	13.852

MONDAY 27.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.				Diff. for 1 Minute.
	h	m	s	s		°	′	″	″
0	22	32	51.21	1.8433	S.	7	56	15.9	13.852
1	22	34	41.71	1.8400		7	42	24.2	13.872
2	22	36	32.01	1.8366		7	28	31.3	13.890
3	22	38	22.10	1.8334		7	14	37.4	13.908
4	22	40	12.00	1.8302		7	0	42.4	13.925
5	22	42	1.72	1.8271		6	46	46.4	13.942
6	22	43	51.25	1.8240		6	32	49.4	13.957
7	22	45	40.60	1.8211		6	18	51.6	13.971
8	22	47	29.78	1.8182		6	4	52.9	13.985
9	22	49	18.78	1.8153		5	50	53.4	13.997
10	22	51	7.61	1.8125		5	36	53.2	14.009
11	22	52	56.28	1.8099		5	22	52.3	14.021
12	22	54	44.80	1.8073		5	8	50.7	14.031
13	22	56	33.16	1.8048		4	54	48.6	14.039
14	22	58	21.37	1.8023		4	40	46.0	14.048
15	23	0	9.44	1.8000		4	26	42.8	14.056
16	23	1	57.37	1.7977		4	12	39.2	14.062
17	23	3	45.16	1.7954		3	58	35.3	14.067
18	23	5	32.82	1.7933		3	44	31.1	14.072
19	23	7	20.36	1.7912		3	30	26.6	14.077
20	23	9	7.77	1.7892		3	16	21.9	14.081
21	23	10	55.06	1.7872		3	2	16.9	14.084
22	23	12	42.24	1.7854		2	48	11.8	14.086
23	23	14	29.31	1.7836	S.	2	34	6.6	14.087

TUESDAY 28.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.				Diff. for 1 Minute.
	h	m	s	s		°	′	″	″
0	23	16	16.27	1.7818	S.	2	20	1.3	14.088
1	23	18	3.13	1.7802		2	5	56.0	14.087
2	23	19	49.90	1.7787		1	51	50.8	14.086
3	23	21	36.58	1.7772		1	37	45.7	14.084
4	23	23	23.17	1.7758		1	23	40.7	14.082
5	23	25	9.68	1.7744		1	9	35.9	14.078
6	23	26	56.10	1.7731		0	55	31.3	14.074
7	23	28	42.45	1.7720		0	41	27.0	14.069
8	23	30	28.74	1.7709		0	27	23.0	14.064
9	23	32	14.96	1.7698	S.	0	13	19.3	14.058
10	23	34	1.12	1.7689	N.	0	0	44.0	14.051
11	23	35	47.23	1.7680		0	14	46.8	14.043
12	23	37	33.28	1.7671		0	28	49.1	14.034
13	23	39	19.28	1.7663		0	42	50.9	14.025
14	23	41	5.24	1.7657		0	56	52.1	14.016
15	23	42	51.17	1.7652		1	10	52.8	14.006
16	23	44	37.06	1.7646		1	24	52.8	13.994
17	23	46	22.92	1.7641		1	38	52.0	13.981
18	23	48	8.75	1.7637		1	52	50.5	13.968
19	23	49	54.56	1.7634		2	6	48.2	13.955
20	23	51	40.36	1.7632		2	20	45.1	13.941
21	23	53	26.14	1.7630		2	34	41.1	13.926
22	23	55	11.92	1.7630		2	48	36.2	13.911
23	23	56	57.70	1.7629		3	2	30.4	13.895
24	23	58	43.47	1.7629	N.	3	16	23.6	13.878

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 58 43.47	1.7629	N. 3 16 23.6	13.878
1	0 0 29.25	1.7631	3 30 15.7	13.860
2	0 2 15.04	1.7633	3 44 6.8	13.842
3	0 4 0.85	1.7636	3 57 56.8	13.823
4	0 5 46.67	1.7639	4 11 45.6	13.803
5	0 7 32.52	1.7643	4 25 33.2	13.783
6	0 9 18.39	1.7647	4 39 19.6	13.762
7	0 11 4.29	1.7653	4 53 4.7	13.741
8	0 12 50.23	1.7660	5 6 48.5	13.719
9	0 14 36.21	1.7667	5 20 30.9	13.696
10	0 16 22.23	1.7675	5 34 12.0	13.672
11	0 18 8.31	1.7684	5 47 51.6	13.647
12	0 19 54.44	1.7693	6 1 29.7	13.622
13	0 21 40.63	1.7703	6 15 6.3	13.597
14	0 23 26.88	1.7713	6 28 41.3	13.571
15	0 25 13.19	1.7724	6 42 14.8	13.544
16	0 26 59.57	1.7737	6 55 46.6	13.516
17	0 28 46.03	1.7750	7 9 16.7	13.488
18	0 30 32.57	1.7763	7 22 45.1	13.459
19	0 32 19.19	1.7777	7 36 11.8	13.429
20	0 34 5.90	1.7792	7 49 36.6	13.398
21	0 35 52.70	1.7808	8 2 59.6	13.368
22	0 37 39.60	1.7825	8 16 20.8	13.336
23	0 39 26.60	1.7842	N. 8 29 40.0	13.303

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 41 13.70	1.7859	N. 8 42 57.2	13.270
1	0 43 0.91	1.7878	8 56 12.4	13.237
2	0 44 48.24	1.7897	9 9 25.6	13.202
3	0 46 35.68	1.7917	9 22 36.7	13.167
4	0 48 23.24	1.7937	9 35 45.7	13.132
5	0 50 10.93	1.7959	9 48 52.5	13.095
6	0 51 58.75	1.7982	10 1 57.1	13.058
7	0 53 46.71	1.8004	10 14 59.5	13.020
8	0 55 34.80	1.8027	10 27 59.5	12.981
9	0 57 23.03	1.8051	10 40 57.2	12.942
10	0 59 11.41	1.8076	10 53 52.5	12.902
11	1 0 59.95	1.8102	11 6 45.4	12.861
12	1 2 48.64	1.8128	11 19 35.8	12.819
13	1 4 37.49	1.8155	11 32 23.7	12.777
14	1 6 26.50	1.8182	11 45 9.1	12.735
15	1 8 15.68	1.8211	11 57 51.9	12.692
16	1 10 5.03	1.8240	12 10 32.1	12.647
17	1 11 54.56	1.8269	12 23 9.6	12.602
18	1 13 44.26	1.8298	12 35 44.3	12.556
19	1 15 34.14	1.8330	12 48 16.3	12.510
20	1 17 24.22	1.8362	13 0 45.5	12.462
21	1 19 14.49	1.8395	13 13 11.8	12.414
22	1 21 4.96	1.8427	13 25 35.2	12.366
23	1 22 55.62	1.8460	13 37 55.7	12.317
24	1 24 46.48	1.8494	N.13 50 13.2	12.267

FRIDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 24 46.48	1.8494	N.13 50 13.2	12.267
1	1 26 37.55	1.8530	14 2 27.7	12.216
2	1 28 28.84	1.8566	14 14 39.1	12.164
3	1 30 20.34	1.8602	14 26 47.3	12.111
4	1 32 12.06	1.8638	14 38 52.4	12.057
5	1 34 4.00	1.8676	14 50 54.2	12.003
6	1 35 56.17	1.8714	15 2 52.8	11.949
7	1 37 48.57	1.8753	15 14 48.1	11.893
8	1 39 41.21	1.8792	15 26 40.0	11.837
9	1 41 34.08	1.8832	15 38 28.5	11.779
10	1 43 27.19	1.8872	15 50 13.5	11.721
11	1 45 20.55	1.8914	16 1 55.0	11.662
12	1 47 14.16	1.8956	16 13 33.0	11.603
13	1 49 8.02	1.8998	16 25 7.4	11.543
14	1 51 2.14	1.9042	16 36 38.1	11.482
15	1 52 56.52	1.9085	16 48 5.2	11.420
16	1 54 51.16	1.9129	16 59 28.5	11.356
17	1 56 46.07	1.9174	17 10 47.9	11.292
18	1 58 41.25	1.9219	17 22 3.5	11.227
19	2 0 36.70	1.9265	17 33 15.2	11.162
20	2 2 32.43	1.9312	17 44 22.9	11.095
21	2 4 28.44	1.9359	17 55 26.6	11.028
22	2 6 24.74	1.9407	18 6 26.2	10.960
23	2 8 21.32	1.9454	N.18 17 21.8	10.892

SATURDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 10 18.19	1.9503	N.18 28 13.2	10.822

PHASES OF THE MOON.

			d	h	m
☾	Last Quarter	July	2	13	23.2
●	New Moon		10	7	35.0
☽	First Quarter		17	4	4.3
○	Full Moon		24	5	45.1

			d	h
☾	Apogee	July	2	15.2
☾	Perigee		15	6.0
☾	Apogee		30	9.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″
1	Antares	W.	104 52 36	3030	106 22 12	3036	107 51 40	3041	109 21 2
	α Aquilæ	W.	56 46 30	4077	57 56 54	4049	59 7 45	4023	60 19 2
	Mars	E.	36 58 47	3375	35 36 2	3386	34 13 30	3398	32 51 11
	α Arietis	E.	43 31 1	3067	42 2 11	3075	40 33 31	3082	39 5 0
	Aldebaran	E.	75 35 33	3109	74 7 34	3116	72 39 44	3122	71 12 1
	Sun	E.	106 59 19	3401	105 37 4	3407	104 14 55	3413	102 52 53
2	α Aquilæ	W.	66 20 54	3901	67 34 13	3886	68 47 47	3871	70 1 36
	Fomalhaut	W.	40 8 32	3899	41 21 53	3853	42 36 1	3811	43 50 52
	Aldebaran	E.	63 55 14	3155	62 28 11	3160	61 1 14	3164	59 34 22
	Sun	E.	96 3 57	3435	94 42 20	3438	93 20 46	3438	91 59 13
3	α Aquilæ	W.	76 14 6	3796	77 29 12	3786	78 44 29	3776	79 59 56
	Fomalhaut	W.	50 14 10	3622	51 32 21	3597	52 50 59	3574	54 10 2
	Aldebaran	E.	52 21 7	3185	50 54 40	3188	49 28 17	3192	48 1 58
	Sun	E.	85 11 34	3437	83 49 59	3435	82 28 22	3432	81 6 42
4	α Aquilæ	W.	86 19 31	3726	87 35 51	3718	88 52 19	3711	90 8 54
	Fomalhaut	W.	60 50 55	3457	62 12 7	3439	63 33 39	3423	64 55 29
	α Pegasi	W.	38 38 43	3558	39 58 3	3521	41 18 4	3487	42 38 43
	Aldebaran	E.	40 51 30	3217	39 25 41	3224	38 0 0	3231	36 34 27
	Sun	E.	74 17 16	3406	72 55 6	3400	71 32 49	3393	70 10 24
5	α Aquilæ	W.	96 33 24	3678	97 50 34	3675	99 7 48	3672	100 25 5
	Fomalhaut	W.	71 49 9	3331	73 12 45	3317	74 36 37	3302	76 0 46
	α Pegasi	W.	49 30 17	3320	50 54 5	3296	52 18 21	3274	53 43 3
	Sun	E.	63 16 12	3345	61 52 52	3335	60 29 21	3325	59 5 38
6	Fomalhaut	W.	83 5 32	3220	84 31 17	3208	85 57 17	3194	87 23 33
	α Pegasi	W.	60 52 39	3153	62 19 44	3134	63 47 12	3116	65 15 2
	Sun	E.	52 4 0	3259	50 39 1	3247	49 13 47	3235	47 48 19
7	Fomalhaut	W.	94 38 35	3122	96 6 18	3110	97 34 15	3100	99 2 25
	α Pegasi	W.	72 39 33	3013	74 9 30	2996	75 39 48	2980	77 10 26
	Mars	W.	32 4 47	3143	33 32 4	3124	34 59 45	3103	36 27 51
	α Arietis	W.	29 21 38	2869	30 54 37	2849	32 28 1	2831	34 1 48
	Sun	E.	40 37 12	3157	39 10 11	3144	37 42 55	3131	36 15 23
8	α Pegasi	W.	84 48 29	2888	86 21 3	2874	87 53 55	2859	89 27 6
	Mars	W.	43 54 14	2991	45 24 38	2973	46 55 24	2957	48 26 31
	α Arietis	W.	41 56 24	2730	43 32 24	2714	45 8 45	2698	46 45 27
	Sun	E.	28 53 44	3054	27 24 38	3042	25 55 17	3030	24 25 42
12	Sun	W.	21 39 33	2679	23 16 41	2666	24 54 7	2655	26 31 48
	Spica	E.	70 16 15	2335	68 31 6	2329	66 45 48	2322	65 0 21
	Saturn	E.	90 12 6	2366	88 27 42	2359	86 43 9	2353	84 58 27
	Antares	E.	116 8 28	2332	114 23 15	2324	112 37 51	2318	110 52 18
13	Sun	W.	34 43 16	2606	36 22 3	2600	38 0 58	2595	39 40 0
	Spica	E.	56 11 5	2291	54 24 53	2288	52 38 36	2285	50 52 14
	Saturn	E.	76 13 1	2324	74 27 37	2322	72 42 9	2318	70 56 36
	Antares	E.	102 2 26	2286	100 16 6	2283	98 29 41	2279	96 43 11

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Antares	W.	110 50 18	3050	112 19 29	3054	113 48 35	3057	115 17 37	3060
	α Aquilæ	W.	61 30 43	3976	62 42 46	3955	63 55 10	3936	65 7 53	3919
	MARS	E.	31 29 6	3423	30 7 15	3437	28 45 40	3451	27 24 21	3467
	α Arietis	E.	37 36 39	3098	36 8 27	3105	34 40 24	3113	33 12 30	3119
	Aldebaran	E.	69 44 26	3134	68 16 58	3140	66 49 37	3145	65 22 22	3151
	SUN	E.	101 30 57	3423	100 9 6	3426	98 47 19	3430	97 25 36	3433
2	α Aquilæ	W.	71 15 40	3844	72 29 57	3830	73 44 28	3819	74 59 11	3807
	Fomalhaut	W.	45 6 23	3737	46 22 31	3705	47 39 13	3675	48 56 27	3648
	Aldebaran	E.	58 7 34	3172	56 40 51	3175	55 14 12	3179	53 47 38	3182
	SUN	E.	90 37 42	3440	89 16 11	3439	87 54 39	3439	86 33 7	3438
3	α Aquilæ	W.	81 15 33	3757	82 31 20	3749	83 47 15	3741	85 3 19	3733
	Fomalhaut	W.	55 29 29	3531	56 49 19	3512	58 9 30	3493	59 30 2	3474
	Aldebaran	E.	46 35 43	3198	45 9 32	3203	43 43 26	3207	42 17 25	3212
	SUN	E.	79 44 58	3425	78 23 10	3421	77 1 17	3416	75 39 19	3412
4	α Aquilæ	W.	91 25 36	3699	92 42 24	3693	93 59 19	3688	95 16 19	3683
	Fomalhaut	W.	66 17 38	3391	67 40 5	3376	69 2 49	3361	70 25 50	3345
	α Pegasi	W.	43 59 57	3425	45 21 45	3396	46 44 6	3370	48 6 57	3345
	Aldebaran	E.	35 9 3	3248	33 43 51	3260	32 18 53	3276	30 54 13	3295
	SUN	E.	68 47 52	3379	67 25 11	3371	66 2 21	3362	64 39 21	3354
5	α Aquilæ	W.	101 42 25	3667	102 59 47	3666	104 17 10	3665	105 34 34	3665
	Fomalhaut	W.	77 25 11	3274	78 49 53	3261	80 14 50	3247	81 40 3	3234
	α Pegasi	W.	55 8 10	3232	56 33 41	3211	57 59 37	3192	59 25 56	3172
	SUN	E.	57 41 44	3304	56 17 37	3294	54 53 18	3282	53 28 46	3270
6	Fomalhaut	W.	88 50 4	3169	90 16 50	3157	91 43 51	3145	93 11 6	3133
	α Pegasi	W.	66 43 13	3081	68 11 46	3063	69 40 41	3046	71 9 57	3030
	SUN	E.	46 22 36	3209	44 56 38	3197	43 30 25	3183	42 3 56	3171
7	Fomalhaut	W.	100 30 48	3079	101 59 23	3070	103 28 9	3060	104 57 7	3052
	α Pegasi	W.	78 41 23	2947	80 12 40	2933	81 44 17	2917	83 16 14	2903
	MARS	W.	37 56 21	3064	39 25 15	3045	40 54 32	3026	42 24 12	3009
	α Arietis	W.	35 35 59	2796	37 10 32	2779	38 45 28	2763	40 20 45	2746
	SUN	E.	34 47 35	3105	33 19 31	3091	31 51 11	3078	30 22 35	3066
8	α Pegasi	W.	91 0 34	2832	92 34 20	2819	94 8 23	2806	95 42 43	2795
	MARS	W.	49 57 59	2924	51 29 48	2907	53 1 58	2891	54 34 28	2875
	α Arietis	W.	48 22 30	2668	49 59 53	2652	51 37 37	2638	53 15 40	2624
	SUN	E.	22 55 54	3010	21 25 54	3001	19 55 43	2995	18 25 24	2991
12	SUN	W.	28 9 43	2635	29 47 50	2626	31 26 9	2619	33 4 38	2612
	Spica	E.	63 14 45	2311	61 29 1	2305	59 43 9	2300	57 57 10	2296
	SATURN	E.	83 13 36	2342	81 28 38	2337	79 43 32	2332	77 58 19	2328
	Antares	E.	109 6 35	2306	107 20 44	2300	105 34 45	2296	103 48 39	2291
13	SUN	W.	41 19 8	2586	42 58 22	2583	44 37 41	2579	46 17 5	2576
	Spica	E.	49 5 47	2279	47 19 16	2276	45 32 41	2274	43 46 4	2272
	SATURN	E.	69 10 59	2313	67 25 19	2312	65 39 37	2311	63 53 53	2311
	Antares	E.	94 56 35	2272	93 9 55	2269	91 23 10	2267	89 36 22	2265

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III$^{\text{h}}$.	P. L. of Diff.	VI$^{\text{h}}$.	P. L. of Diff.	IX$^{\text{h}}$.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
14	SUN	W.	47 56 33	2574	49 36 4	2571	51 15 39	2569	52 55 16	2567
	JUPITER	W.	26 38 59	2328	28 24 18	2326	30 9 39	2325	31 55 2	2324
	Spica	E.	41 59 24	2272	40 12 43	2270	38 26 0	2270	36 39 16	2270
	SATURN	E.	62 8 9	2310	60 22 24	2311	58 36 40	2311	56 50 56	2312
	Antares	E.	87 49 31	2263	86 2 37	2262	84 15 41	2260	82 28 43	2259
15	SUN	W.	61 13 46	2565	62 53 29	2565	64 33 12	2566	66 12 54	2566
	JUPITER	W.	40 42 13	2323	42 27 39	2323	44 13 5	2324	45 58 29	2325
	Regulus	W.	26 24 0	2260	28 10 59	2260	29 57 57	2261	31 44 54	2262
	SATURN	E.	48 2 59	2326	46 17 38	2331	44 32 24	2337	42 47 18	2343
	Antares	E.	73 33 38	2258	71 46 37	2258	69 59 36	2260	68 12 37	2260
16	SUN	W.	74 31 4	2574	76 10 35	2576	77 50 3	2578	79 29 28	2580
	JUPITER	W.	54 45 4	2333	56 30 16	2335	58 15 25	2337	60 0 30	2339
	Regulus	W.	40 39 16	2269	42 26 1	2270	44 12 44	2272	45 59 24	2275
	Antares	E.	59 18 7	2268	57 31 20	2270	55 44 37	2272	53 57 57	2275
	a Aquilæ	E.	110 27 6	3060	108 58 7	3045	107 28 50	3032	105 59 17	3022
17	SUN	W.	87 45 39	2596	89 24 40	2599	91 3 37	2602	92 42 29	2606
	JUPITER	W.	68 44 59	2355	70 29 39	2357	72 14 15	2361	73 58 46	2364
	Regulus	W.	54 51 45	2289	56 38 0	2292	58 24 11	2296	60 10 17	2300
	Antares	E.	45 5 35	2289	43 19 20	2292	41 33 9	2296	39 47 3	2299
	a Aquilæ	E.	98 28 48	2989	96 58 22	2988	95 27 54	2987	93 57 25	2987
18	SUN	W.	100 55 30	2626	102 33 49	2631	104 12 2	2635	105 50 9	2640
	JUPITER	W.	82 40 0	2384	84 23 58	2389	86 7 49	2393	87 51 34	2397
	Regulus	W.	68 59 24	2318	70 44 57	2323	72 30 23	2327	74 15 43	2331
	a Aquilæ	E.	86 25 40	3009	84 55 38	3017	83 25 46	3026	81 56 5	3037
	Fomalhaut	E.	111 20 3	2687	109 43 5	2683	108 6 2	2680	106 28 55	2678
19	SUN	W.	113 59 3	2666	115 36 29	2671	117 13 48	2677	118 50 59	2683
	Regulus	W.	83 0 45	2355	84 45 24	2360	86 29 56	2365	88 14 21	2371
	Spica	W.	29 2 22	2369	30 46 41	2373	32 30 55	2377	34 15 3	2382
	a Aquilæ	E.	74 31 30	3110	73 3 32	3129	71 35 58	3150	70 8 49	3173
	Fomalhaut	E.	98 23 5	2681	96 45 59	2683	95 8 56	2687	93 31 58	2691
20	SUN	W.	126 54 54	2713	128 31 16	2720	130 7 29	2727	131 43 33	2735
	Regulus	W.	96 54 26	2399	98 38 2	2405	100 21 30	2411	102 4 49	2418
	Spica	W.	42 54 1	2407	44 37 26	2412	46 20 44	2417	48 3 54	2424
	a Aquilæ	E.	63 0 39	3319	61 36 49	3356	60 13 42	3395	58 51 20	3438
	Fomalhaut	E.	85 28 49	2721	83 52 37	2730	82 16 37	2739	80 40 49	2748
	a Pegasi	E.	107 30 10	2610	105 51 28	2612	104 12 50	2615	102 34 16	2619
21	Spica	W.	56 37 29	2456	58 19 44	2463	60 1 49	2470	61 43 44	2478
	SATURN	W.	37 15 53	2551	38 55 55	2552	40 35 56	2553	42 15 55	2555
	Fomalhaut	E.	72 45 15	2808	71 10 57	2822	69 36 58	2838	68 3 19	2855
	a Pegasi	E.	94 22 53	2644	92 44 58	2652	91 7 13	2658	89 29 37	2666
22	Spica	W.	70 10 39	2517	71 51 29	2525	73 32 7	2533	75 12 34	2543
	SATURN	W.	50 34 47	2576	52 14 15	2583	53 53 34	2583	55 32 45	2596
	Fomalhaut	E.	60 20 54	2955	58 49 45	2980	57 19 7	3006	55 49 2	3034
	a Pegasi	E.	81 24 24	2711	79 47 59	2722	78 11 48	2732	76 35 51	2744

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
14	Sun	W.	54 34 56	2566	56 14 37	2565	57 54 20	2565	59 34 3	2565
	Jupiter	W.	33 40 27	2323	35 25 53	2323	37 11 19	2322	38 56 46	2322
	Spica	E.	34 52 32	2270	33 5 48	2271	31 19 6	2272	29 32 25	2274
	Saturn	E.	55 5 14	2313	53 19 34	2316	51 33 58	2319	49 48 26	2322
	Antares	E.	80 41 43	2258	78 54 42	2258	77 7 41	2258	75 20 40	2258
15	Sun	W.	67 52 36	2567	69 32 16	2569	71 11 54	2570	72 51 30	2572
	Jupiter	W.	47 43 52	2326	49 29 13	2328	51 14 32	2329	52 59 49	2331
	Regulus	W.	33 31 50	2263	35 18 44	2264	37 5 37	2265	38 52 28	2267
	Saturn	E.	41 2 21	2350	39 17 35	2359	37 33 1	2368	35 48 41	2380
	Antares	E.	66 25 39	2261	64 38 42	2263	62 51 48	2264	61 4 56	2266
16	Sun	W.	81 8 50	2583	82 48 8	2585	84 27 23	2589	86 6 33	2592
	Jupiter	W.	61 45 32	2342	63 30 30	2345	65 15 24	2348	67 0 14	2351
	Regulus	W.	47 46 0	2277	49 32 33	2281	51 19 1	2283	53 5 25	2286
	Antares	E.	52 11 21	2278	50 24 49	2280	48 38 20	2283	46 51 55	2286
	a Aquilæ	E.	104 29 31	3012	102 59 33	3004	101 29 25	2997	99 59 9	2993
17	Sun	W.	94 21 16	2610	95 59 58	2614	97 38 34	2618	99 17 5	2622
	Jupiter	W.	75 43 12	2368	77 27 32	2372	79 11 47	2376	80 55 56	2380
	Regulus	W.	61 56 17	2303	63 42 12	2307	65 28 2	2311	67 13 46	2315
	Antares	E.	38 1 2	2303	36 15 7	2307	34 29 17	2311	32 43 33	2314
	a Aquilæ	E.	92 26 56	2989	90 56 30	2992	89 26 7	2997	87 55 50	3002
18	Sun	W.	107 28 9	2645	109 6 3	2650	110 43 50	2655	112 21 30	2660
	Jupiter	W.	89 35 13	2402	91 18 45	2407	93 2 10	2412	94 45 28	2416
	Regulus	W.	76 0 57	2336	77 46 4	2340	79 31 5	2345	81 15 59	2350
	a Aquilæ	E.	80 26 38	3048	78 57 25	3061	77 28 28	3076	75 59 49	3092
	Fomalhaut	E.	104 51 46	2677	103 14 35	2677	101 37 24	2678	100 0 14	2678
19	Sun	W.	120 28 2	2688	122 4 58	2695	123 41 45	2701	125 18 24	2707
	Regulus	W.	89 58 38	2376	91 42 47	2382	93 26 48	2387	95 10 41	2393
	Spica	W.	35 59 4	2386	37 42 59	2391	39 26 47	2396	41 10 28	2401
	a Aquilæ	E.	68 42 7	3198	67 15 55	3224	65 50 14	3253	64 25 8	3285
	Fomalhaut	E.	91 55 6	2695	90 18 20	2701	88 41 41	2707	87 5 10	2714
20	Sun	W.	133 19 27	2741	134 55 12	2749	136 30 47	2756	138 6 12	2764
	Regulus	W.	103 47 58	2424	105 30 58	2431	107 13 49	2438	108 56 30	2444
	Spica	W.	49 46 55	2430	51 29 47	2436	53 12 30	2443	54 55 4	2449
	a Aquilæ	E.	57 29 46	3484	56 9 4	3535	54 49 19	3590	53 30 34	3650
	Fomalhaut	E.	79 5 13	2759	77 29 51	2769	75 54 43	2782	74 19 51	2794
	a Pegasi	E.	100 55 47	2623	99 17 23	2628	97 39 6	2633	96 0 56	2638
21	Spica	W.	63 25 28	2485	65 7 2	2493	66 48 25	2500	68 29 38	2509
	Saturn	W.	43 55 52	2559	45 35 44	2562	47 15 31	2566	48 55 12	2571
	Fomalhaut	E.	66 30 2	2872	64 57 7	2891	63 24 37	2911	61 52 32	2932
	a Pegasi	E.	87 52 12	2674	86 14 57	2683	84 37 54	2692	83 1 3	2701
22	Spica	W.	76 52 48	2551	78 32 50	2560	80 12 40	2569	81 52 17	2579
	Saturn	W.	57 11 46	2602	58 50 38	2610	60 29 20	2618	62 7 51	2625
	Fomalhaut	E.	54 19 31	3065	52 50 38	3096	51 22 24	3131	49 54 52	3169
	a Pegasi	E.	75 0 10	2756	73 24 45	2769	71 49 36	2782	70 14 45	2796

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Spica W.	83 31 41	2588	85 10 52	2598	86 49 50	2607	88 28 35	2617
	SATURN W.	63 46 12	2633	65 24 22	2642	67 2 20	2651	68 40 6	2660
	Antares W.	37 38 11	2585	39 17 27	2594	40 56 30	2604	42 35 20	2614
	Fomalhaut E.	48 28 6	3210	47 2 9	3254	45 37 4	3302	44 12 55	3355
	α Pegasi E.	68 40 12	2811	67 5 58	2825	65 32 3	2842	63 58 29	2858
24	Spica W.	96 38 58	2668	98 16 21	2678	99 53 30	2689	101 30 25	2700
	SATURN W.	76 45 51	2707	78 22 21	2717	79 58 38	2728	81 34 41	2738
	Antares W.	50 46 5	2665	52 23 32	2675	54 0 46	2685	55 37 46	2696
	α Pegasi E.	56 16 18	2954	54 45 7	2976	53 14 24	3000	51 44 11	3024
	α Arietis E.	97 21 33	2681	95 44 27	2692	94 7 36	2701	92 30 58	2713
	MARS E.	106 24 6	2926	104 52 20	2936	103 20 47	2947	101 49 28	2958
25	SATURN W.	89 31 28	2792	91 6 7	2802	92 40 32	2813	94 14 43	2825
	Antares W.	63 39 11	2750	65 14 45	2760	66 50 5	2771	68 25 11	2782
	α Arietis E.	84 31 22	2766	82 56 9	2777	81 21 11	2788	79 46 27	2799
	MARS E.	94 16 17	3014	92 46 21	3024	91 16 38	3035	89 47 9	3047
26	SATURN W.	102 2 0	2880	103 34 45	2891	105 7 15	2902	106 39 31	2913
	Antares W.	76 17 7	2836	77 50 48	2846	79 24 16	2856	80 57 31	2867
	α Arietis E.	71 56 24	2854	70 23 6	2865	68 50 2	2876	67 17 12	2886
	MARS E.	82 23 14	3104	80 55 9	3114	79 27 17	3126	77 59 39	3138
	Aldebaran E.	103 42 49	2914	102 10 48	2924	100 38 59	2933	99 7 22	2943
27	Antares W.	88 40 27	2917	90 12 24	2926	91 44 10	2935	93 15 44	2944
	α Aquilæ W.	44 47 13	4582	45 49 53	4506	46 53 40	4437	47 58 28	4374
	α Arietis E.	59 36 25	2939	58 4 56	2949	56 33 39	2959	55 2 35	2969
	MARS E.	70 44 51	3192	69 18 32	3203	67 52 26	3213	66 26 32	3223
	Aldebaran E.	91 32 21	2991	90 1 57	3001	88 31 45	3010	87 1 45	3019
28	Antares W.	100 50 48	2986	102 21 18	2994	103 51 38	3001	105 21 49	3008
	α Aquilæ W.	53 35 8	4139	54 44 32	4104	55 54 30	4073	57 4 58	4043
	α Arietis E.	47 30 19	3018	46 0 28	3026	44 30 48	3035	43 1 19	3044
	MARS E.	59 20 0	3272	57 55 16	3281	56 30 42	3290	55 6 19	3300
	Aldebaran E.	79 34 32	3064	78 5 38	3072	76 36 54	3081	75 8 21	3088
29	α Aquilæ W.	63 3 44	3931	64 16 32	3914	65 29 38	3898	66 43 0	3883
	Fomalhaut W.	37 3 1	4034	38 14 7	3975	39 26 11	3922	40 39 8	3875
	MARS E.	48 6 55	3340	46 43 30	3349	45 20 15	3356	43 57 8	3364
	Aldebaran E.	67 47 57	3126	66 20 19	3133	64 52 50	3140	63 25 29	3148
	SUN E.	125 43 7	3403	124 20 54	3408	122 58 47	3414	121 36 46	3417
30	α Aquilæ W.	72 53 13	3824	74 7 50	3816	75 22 36	3806	76 37 32	3798
	Fomalhaut W.	46 54 35	3697	48 11 25	3671	49 28 43	3646	50 46 28	3623
	MARS E.	37 3 43	3401	35 41 28	3409	34 19 22	3417	32 57 25	3425
	Aldebaran E.	56 10 42	3178	54 44 6	3183	53 17 37	3189	51 51 15	3195
	SUN E.	114 47 43	3433	113 26 4	3435	112 4 27	3437	110 42 52	3438
31	α Aquilæ W.	82 54 7	3765	84 9 46	3759	85 25 31	3753	86 41 22	3748
	Fomalhaut W.	57 20 57	3527	58 40 51	3511	60 1 3	3496	61 21 32	3481
	Aldebaran E.	44 41 11	3226	43 15 33	3233	41 50 3	3241	40 24 42	3248
	SUN E.	103 55 0	3434	102 33 22	3432	101 11 42	3430	99 49 59	3426

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV$^{\text{h}}$.	P. L. of Diff.	XVIII$^{\text{h}}$.	P. L. of Diff.	XXI$^{\text{h}}$.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Spica	W.	90 7 7	2627	91 45 25	2637	93 23 30	2647	95 1 21	2657
	SATURN	W.	70 17 40	2669	71 55 2	2678	73 32 11	2688	75 9 7	2697
	Antares	W.	44 13 56	2624	45 52 19	2634	47 30 28	2644	49 8 23	2654
	Fomalhaut	E.	42 49 47	3412	41 27 44	3476	40 6 53	3545	38 47 19	3623
	α Pegasi	E.	62 25 16	2875	60 52 25	2894	59 19 58	2912	57 47 55	2933
24	Spica	W.	103 7 5	2710	104 43 31	2721	106 19 43	2732	107 55 41	2743
	SATURN	W.	83 10 30	2749	84 46 5	2759	86 21 27	2769	87 56 35	2781
	Antares	W.	57 14 31	2707	58 51 2	2717	60 27 19	2728	62 3 22	2738
	α Pegasi	E.	50 14 28	3051	48 45 18	3078	47 16 42	3109	45 48 43	3141
	α Arietis	E.	90 54 35	2722	89 18 25	2734	87 42 30	2744	86 6 49	2755
	MARS	E.	100 18 22	2969	98 47 30	2980	97 16 52	2991	95 46 28	3001
25	SATURN	W.	95 48 39	2835	97 22 21	2847	98 55 48	2858	100 29 1	2869
	Antares	W.	70 0 2	2792	71 34 40	2804	73 9 3	2815	74 43 12	2825
	α Arietis	E.	78 11 58	2810	76 37 43	2821	75 3 42	2832	73 29 56	2843
	MARS	E.	88 17 54	3058	86 48 53	3069	85 20 6	3081	83 51 33	3092
26	SATURN	W.	108 11 33	2924	109 43 21	2935	111 14 55	2946	112 46 15	2958
	Antares	W.	82 30 32	2877	84 3 20	2887	85 35 55	2898	87 8 17	2907
	α Arietis	E.	65 44 35	2897	64 12 12	2908	62 40 3	2918	61 8 7	2929
	MARS	E.	76 32 15	3148	75 5 4	3160	73 38 7	3171	72 11 23	3181
	Aldebaran	E.	97 35 58	2952	96 4 45	2962	94 33 45	2972	93 2 57	2981
27	Antares	W.	94 47 7	2953	96 18 19	2962	97 49 19	2970	99 20 9	2979
	α Aquilæ	W.	49 4 13	4318	50 10 49	4266	51 18 13	4220	52 26 20	4177
	α Arietis	E.	53 31 43	2979	52 1 4	2989	50 30 37	2998	49 0 22	3008
	MARS	E.	65 0 50	3233	63 35 20	3243	62 10 2	3253	60 44 55	3263
	Aldebaran	E.	85 31 56	3028	84 2 18	3038	82 32 52	3047	81 3 37	3055
28	Antares	W.	106 51 52	3015	108 21 46	3022	109 51 32	3027	111 21 11	3033
	α Aquilæ	W.	58 15 55	4017	59 27 18	3992	60 39 5	3970	61 51 14	3949
	α Arietis	E.	41 32 1	3053	40 2 54	3062	38 33 58	3071	37 5 13	3079
	MARS	E.	53 42 7	3308	52 18 5	3316	50 54 12	3325	49 30 29	3332
	Aldebaran	E.	73 39 57	3096	72 11 43	3105	70 43 39	3112	69 15 44	3119
29	α Aquilæ	W.	67 56 37	3869	69 10 28	3857	70 24 31	3846	71 38 46	3834
	Fomalhaut	W.	41 52 53	3832	43 7 22	3793	44 22 31	3759	45 38 16	3727
	MARS	E.	42 34 10	3371	41 11 20	3379	39 48 39	3386	38 26 7	3393
	Aldebaran	E.	61 58 17	3153	60 31 12	3160	59 4 15	3166	57 37 25	3172
	SUN	E.	120 14 49	3422	118 52 57	3425	117 31 9	3429	116 9 25	3431
30	α Aquilæ	W.	77 52 36	3791	79 7 48	3783	80 23 8	3777	81 38 34	3770
	Fomalhaut	W.	52 4 38	3601	53 23 11	3581	54 42 6	3562	56 1 22	3545
	MARS	E.	31 35 37	3434	30 13 59	3445	28 52 33	3456	27 31 20	3470
	Aldebaran	E.	50 25 0	3201	48 58 52	3207	47 32 51	3213	46 6 57	3220
	SUN	E.	109 21 18	3438	107 59 44	3438	106 38 10	3438	105 16 36	3436
31	α Aquilæ	W.	87 57 18	3744	89 13 19	3740	90 29 24	3735	91 45 34	3732
	Fomalhaut	W.	62 42 17	3466	64 3 19	3453	65 24 36	3438	66 46 9	3425
	Aldebaran	E.	38 59 30	3258	37 34 29	3268	36 9 40	3279	34 45 4	3292
	SUN	E.	98 28 12	3423	97 6 21	3418	95 44 25	3414	94 22 24	3408

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.		Subtracted from Apparent Time.	
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	8 48 26.51	9.691	N.17 50 31.2	−38.32	15 48.11	66.58	6 3.56	0.165
SUN.	2	8 52 18.80	9.667	17 35 2.8	39.05	15 48.24	66.50	5 59.31	0.189
Mon.	3	8 56 10.51	9.642	17 19 17.1	39.76	15 48.37	66.41	5 54.47	0.214
Tues.	4	9 0 1.62	9.618	17 3 14.5	−40.46	15 48.50	66.32	5 49.05	0.238
Wed.	5	9 3 52.16	9.593	16 46 55.1	41.15	15 48.64	66.24	5 43.04	0.262
Thur.	6	9 7 42.11	9.569	16 30 19.5	41.82	15 48.78	66.15	5 36.45	0.287
Frid.	7	9 11 31.48	9.545	16 13 27.7	−42.48	15 48.93	66.07	5 29.28	0.311
Sat.	8	9 15 20.26	9.521	15 56 20.3	43.13	15 49.08	65.98	5 21.53	0.335
SUN.	9	9 19 8.46	9.496	15 38 57.5	43.76	15 49.24	65.90	5 13.20	0.359
Mon.	10	9 22 56.09	9.472	15 21 19.6	−44.38	15 49.40	65.82	5 4.30	0.383
Tues.	11	9 26 43.14	9.449	15 3 27.0	44.99	15 49.57	65.73	4 54.82	0.407
Wed.	12	9 30 29.62	9.425	14 45 20.0	45.58	15 49.74	65.65	4 44.77	0.431
Thur.	13	9 34 15.54	9.402	14 26 59.0	−46.16	15 49.92	65.58	4 34.16	0.454
Frid.	14	9 38 0.90	9.379	14 8 24.2	46.73	15 50.10	65.50	4 23.00	0.477
Sat.	15	9 41 45.71	9.356	13 49 36.1	47.28	15 50.28	65.42	4 11.28	0.499
SUN.	16	9 45 29.98	9.334	13 30 34.9	−47.82	15 50.47	65.35	3 59.03	0.521
Mon.	17	9 49 13.72	9.312	13 11 20.9	48.34	15 50.66	65.27	3 46.25	0.543
Tues.	18	9 52 56.93	9.290	12 51 54.6	48.85	15 50.86	65.20	3 32.95	0.564
Wed.	19	9 56 39.65	9.269	12 32 16.0	−49.35	15 51.06	65.13	3 19.14	0.585
Thur.	20	10 0 21.87	9.249	12 12 25.7	49.84	15 51.26	65.06	3 4.85	0.605
Frid.	21	10 4 3.61	9.230	11 52 23.8	50.31	15 51.46	64.99	2 50.07	0.625
Sat.	22	10 7 44.90	9.211	11 32 10.8	−50.77	15 51.66	64.93	2 34.84	0.644
SUN.	23	10 11 25.73	9.193	11 11 46.7	51.22	15 51.87	64.87	2 19.17	0.662
Mon.	24	10 15 6.14	9.176	10 51 12.1	51.66	15 52.08	64.81	2 3.07	0.679
Tues.	25	10 18 46.14	9.159	10 30 27.1	−52.08	15 52.29	64.75	1 46.56	0.696
Wed.	26	10 22 25.75	9.143	10 9 32.1	52.49	15 52.50	64.69	1 29.66	0.712
Thur.	27	10 26 4.99	9.128	9 48 27.2	52.90	15 52.71	64.63	1 12.40	0.727
Frid.	28	10 29 43.88	9.113	9 27 13.0	−53.29	15 52.93	64.58	0 54.77	0.741
Sat.	29	10 33 22.42	9.100	9 5 49.5	53.66	15 53.15	64.53	0 36.82	0.755
SUN.	30	10 37 0.65	9.087	8 44 17.2	54.02	15 53.37	64.48	0 18.54	0.768
Mon.	31	10 40 38.58	9.075	8 22 36.4	54.37	15 53.59	64.43	0 0.04	0.780
Tues.	32	10 44 16.22	9.063	N. 8 0 47.4	−54.71	15 53.81	64.39	0 18.90	0.791

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^s.18$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from / Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	8 48 25.53	9.692	N.17 50 35.0	−38.32	6 3.58	0.165	8 42 21.95
SUN.	2	8 52 17.84	9.667	17 35 6.6	39.04	5 59.33	0.190	8 46 18.51
Mon.	3	8 56 9.56	9.643	17 19 21.0	39.76	5 54.49	0.214	8 50 15.06
Tues.	4	9 0 0.69	9.618	17 3 18.3	−40.46	5 49.07	0.238	8 54 11.62
Wed.	5	9 3 51.24	9.594	16 46 59.0	41.15	5 43.06	0.262	8 58 8.18
Thur.	6	9 7 41.21	9.570	16 30 23.3	41.82	5 36.48	0.287	9 2 4.74
Frid.	7	9 11 30.60	9.546	16 13 31.6	−42.48	5 29.31	0.311	9 6 1.29
Sat.	8	9 15 19.41	9.522	15 56 24.1	43.13	5 21.56	0.335	9 9 57.85
SUN.	9	9 19 7.63	9.498	15 39 1.2	43.77	5 13.23	0.359	9 13 54.40
Mon.	10	9 22 55.29	9.474	15 21 23.3	−44.39	5 4.33	0.383	9 17 50.96
Tues.	11	9 26 42.37	9.450	15 3 30.6	44.99	4 54.85	0.407	9 21 47.52
Wed.	12	9 30 28.88	9.426	14 45 23.6	45.59	4 44.81	0.431	9 25 44.07
Thur.	13	9 34 14.82	9.403	14 27 2.4	−46.17	4 34.20	0.454	9 29 40.63
Frid.	14	9 38 0.21	9.380	14 8 27.6	46.73	4 23.03	0.477	9 33 37.18
Sat.	15	9 41 45.06	9.357	13 49 39.3	47.28	4 11.32	0.499	9 37 33.74
SUN.	16	9 45 29.36	9.335	13 30 38.0	−47.82	3 59.07	0.521	9 41 30.29
Mon.	17	9 49 13.13	9.313	13 11 23.9	48.35	3 46.28	0.543	9 45 26.85
Tues.	18	9 52 56.38	9.292	12 51 57.4	48.86	3 32.98	0.564	9 49 23.40
Wed.	19	9 56 39.13	9.271	12 32 18.7	−49.36	3 19.17	0.585	9 53 19.96
Thur.	20	10 0 21.39	9.251	12 12 28.2	49.84	3 4.88	0.605	9 57 16.51
Frid.	21	10 4 3.17	9.231	11 52 26.2	50.32	2 50.10	0.625	10 1 13.07
Sat.	22	10 7 44.50	9.212	11 32 12.9	−50.78	2 34.87	0.644	10 5 9.62
SUN.	23	10 11 25.37	9.194	11 11 48.7	51.23	2 19.19	0.662	10 9 6.18
Mon.	24	10 15 5.82	9.177	10 51 13.8	51.67	2 3.09	0.679	10 13 2.73
Tues.	25	10 18 45.87	9.160	10 30 28.6	−52.09	1 46.58	0.696	10 16 59.29
Wed.	26	10 22 25.52	9.144	10 9 33.3	52.51	1 29.68	0.712	10 20 55.84
Thur.	27	10 26 4.81	9.129	9 48 28.2	52.91	1 12.41	0.727	10 24 52.40
Frid.	28	10 29 43.74	9.115	9 27 13.7	−53.30	0 54.78	0.741	10 28 48.95
Sat.	29	10 33 22.33	9.101	9 5 50.0	53.67	0 36.82	0.755	10 32 45.51
SUN.	30	10 37 0.60	9.088	8 44 17.4	54.03	0 18.54	0.768	10 36 42.06
Mon.	31	10 40 38.58	9.076	8 22 36.4	54.38	0 0.04	0.780	10 40 38.62
Tues.	32	10 44 16.27	9.065	N. 8 0 47.0	−54.72	0 18.90	0.792	10 44 35.17

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour, $+9^s.8565$. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	214	129 40 3.4	39 23.4	143.59	+ 0.58	0.0063151	−23.4	15 15 7.71
2	215	130 37 30.1	36 49.8	143.64	0.61	0.0062581	24.1	15 11 11.80
3	216	131 34 58.1	34 17.6	143.69	0.60	0.0061992	24.9	15 7 15.89
4	217	132 32 27.4	31 46.7	143.74	+ 0.55	0.0061383	−25.8	15 3 19.98
5	218	133 29 57.8	29 17.0	143.79	0.49	0.0060752	26.7	14 59 24.07
6	219	134 27 29.6	26 48.6	143.85	0.40	0.0060099	27.6	14 55 28.16
7	220	135 25 2.5	24 21.4	143.90	+ 0.29	0.0059424	−28.6	14 51 32.25
8	221	136 22 36.6	21 55.3	143.95	0.16	0.0058725	29.6	14 47 36.34
9	222	137 20 11.9	19 30.5	144.00	+ 0.03	0.0058004	30.6	14 43 40.43
10	223	138 17 48.3	17 6.7	144.04	− 0.10	0.0057259	−31.5	14 39 44.52
11	224	139 15 25.8	14 44.1	144.09	0.21	0.0056492	32.4	14 35 48.61
12	225	140 13 4.4	12 22.5	144.13	0.32	0.0055703	33.3	14 31 52.70
13	226	141 10 44.0	10 2.0	144.17	− 0.41	0.0054894	−34.1	14 27 56.79
14	227	142 8 24.6	7 42.5	144.22	0.48	0.0054066	34.9	14 24 0.88
15	228	143 6 6.3	5 24.0	144.26	0.51	0.0053220	35.6	14 20 4.97
16	229	144 3 49.1	3 6.7	144.30	− 0.52	0.0052356	−36.3	14 16 9.06
17	230	145 1 32.9	0 50.3	144.35	0.49	0.0051479	36.9	14 12 13.15
18	231	145 59 17.7	58 35.0	144.40	0.43	0.0050586	37.4	14 8 17.24
19	232	146 57 3.7	56 20.9	144.45	− 0.35	0.0049683	−37.9	14 4 21.34
20	233	147 54 51.0	54 8.0	144.50	0.25	0.0048768	38.3	14 0 25.43
21	234	148 52 39.6	51 56.3	144.55	− 0.13	0.0047843	38.7	13 56 29.52
22	235	149 50 29.5	49 46.0	144.61	0.00	0.0046911	−39.0	13 52 33.61
23	236	150 48 20.7	47 37.2	144.67	+ 0.14	0.0045969	39.4	13 48 37.70
24	237	151 46 13.3	45 29.8	144.73	0.27	0.0045020	39.7	13 44 41.79
25	238	152 44 7.5	43 23.9	144.80	+ 0.39	0.0044062	−40.0	13 40 45.88
26	239	153 42 3.5	41 19.7	144.87	0.49	0.0043099	40.3	13 36 49.97
27	240	154 40 1.3	39 17.4	144.94	0.57	0.0042127	40.6	13 32 54.06
28	241	155 38 0.7	37 16.7	145.02	+ 0.63	0.0041147	−41.0	13 28 58.16
29	242	156 36 2.0	35 17.9	145.10	0.65	0.0040158	41.4	13 25 2.25
30	243	157 34 5.2	33 21.0	145.18	0.66	0.0039159	41.9	13 21 6.34
31	244	158 32 10.4	31 26.0	145.26	0.63	0.0038148	42.4	13 17 10.4
32	245	159 30 17.6	29 33.1	145.34	+ 0.57	0.0037126	−42.9	13 13 14.5

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^d.0$.

Diff. for 1 Hou
$-9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
14 51.4	14 54.0	54 24.8	+0.68	54 34.2	+0.89	18 1.0	1.94	21.7
14 57.2	15 1.1	54 46.1	1.09	55 0.4	1.29	18 49.4	2.10	22.7
15 5.6	15 10.7	55 17.0	1.47	55 35.7	1.64	19 41.7	2.25	23.7
15 16.3	15 22.4	55 56.3	+1.78	56 18.5	+1.90	20 37.3	2.37	24.7
15 28.8	15 35.3	56 41.9	1.98	57 6.1	2.03	21 34.7	2.41	25.7
15 42.0	15 48.7	57 30.6	2.04	57 55.1	2.01	22 32.2	2.37	26.7
15 55.2	16 1.3	58 18.9	+1.94	58 41.6	+1.82	23 28.1	2.28	27.7
16 7.1	16 12.2	59 2.6	1.66	59 21.4	1.46	☌		28.7
16 16.6	16 20.2	59 37.6	1.23	59 50.9	0.98	0 21.7	2.18	0.3
16 23.0	16 24.9	60 1.0	+0.70	60 7.8	+0.43	1 13.1	2.10	1.3
16 25.8	16 25.8	60 11.3	+0.15	60 11.4	−0.13	2 3.0	2.07	2.3
16 25.0	16 23.4	60 8.5	−0.37	60 2.6	0.59	2 52.7	2.08	3.3
16 21.1	16 18.2	59 54.2	−0.79	59 43.7	−0.95	3 43.3	2.15	4.3
16 14.9	16 11.1	59 31.4	1.09	59 17.5	1.20	4 36.0	2.25	5.3
16 7.1	16 2.8	59 2.6	1.28	58 46.9	1.33	5 31.4	2.37	6.3
15 58.3	15 53.9	58 30.6	−1.37	58 14.1	−1.38	6 29.3	2.45	7.3
15 49.3	15 44.8	57 57.5	1.38	57 41.0	1.38	7 28.6	2.47	8.3
15 40.3	15 35.9	57 24.4	1.37	57 8.2	1.34	8 27.3	2.40	9.3
15 31.6	15 27.3	56 52.3	−1.31	56 36.7	−1.29	9 23.5	2.27	10.3
15 23.2	15 19.1	56 21.4	1.26	56 6.5	1.22	10 15.9	2.10	11.3
15 15.2	15 11.4	55 52.1	1.18	55 38.1	1.14	11 4.3	1.94	12.3
15 7.7	15 4.2	55 24.7	−1.09	55 11.9	−1.05	11 49.0	1.80	13.3
15 1.0	14 57.9	54 59.8	0.98	54 48.5	0.90	12 31.0	1.71	14.3
14 55.0	14 52.5	54 38.1	0.82	54 28.8	0.72	13 11.2	1.66	15.3
14 50.4	14 48.6	54 20.9	−0.60	54 14.3	−0.49	13 50.8	1.65	16.3
14 47.2	14 46.3	54 9.2	0.35	54 5.9	−0.20	14 30.7	1.68	17.3
14 45.9	14 46.0	54 4.4	−0.04	54 5.0	+0.14	15 11.9	1.76	18.3
14 46.8	14 48.1	54 7.7	+0.32	54 12.6	+0.51	15 55.4	1.87	19.3
14 50.1	14 52.8	54 20.0	0.71	54 29.7	0.92	16 41.8	2.01	20.3
14 56.1	15 0.1	54 42.0	1.13	54 56.7	1.33	17 31.7	2.15	21.3
15 4.8	15 10.0	55 13.8	1.52	55 33.2	1.71	18 24.8	2.27	22.3
15 15.9	15 22.4	55 54.8	+1.88	56 18.4	+2.04	19 20.2	2.34	23.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 1.			
	h m s	s	° ′ ″	″
0	2 10 18.19	1.9503	N.18 28 13.2	10.822
1	2 12 15.36	1.9552	18 39 0.4	10.751
2	2 14 12.82	1.9602	18 49 43.3	10.678
3	2 16 10.58	1.9652	19 0 21.8	10.605
4	2 18 8.64	1.9703	19 10 55.9	10.532
5	2 20 7.01	1.9754	19 21 25.6	10.457
6	2 22 5.69	1.9806	19 31 50.8	10.382
7	2 24 4.68	1.9858	19 42 11.4	10.305
8	2 26 3.98	1.9910	19 52 27.4	10.228
9	2 28 3.60	1.9963	20 2 38.8	10.150
10	2 30 3.54	2.0017	20 12 45.4	10.070
11	2 32 3.80	2.0071	20 22 47.2	9.990
12	2 34 4.39	2.0126	20 32 44.2	9.909
13	2 36 5.31	2.0180	20 42 36.3	9.827
14	2 38 6.55	2.0234	20 52 23.4	9.743
15	2 40 8.12	2.0290	21 2 5.5	9.659
16	2 42 10.03	2.0346	21 11 42.5	9.574
17	2 44 12.28	2.0402	21 21 14.4	9.488
18	2 46 14.86	2.0458	21 30 41.1	9.401
19	2 48 17.78	2.0516	21 40 2.5	9.313
20	2 50 21.05	2.0574	21 49 18.6	9.224
21	2 52 24.67	2.0632	21 58 29.4	9.134
22	2 54 28.63	2.0689	22 7 34.7	9.042
23	2 56 32.94	2.0747	N.22 16 34.5	8.950
	SUNDAY 2.			
0	2 58 37.59	2.0804	N.22 25 28.7	8.857
1	3 0 42.59	2.0863	22 34 17.3	8.762
2	3 2 47.95	2.0923	22 43 0.2	8.667
3	3 4 53.67	2.0982	22 51 37.3	8.570
4	3 6 59.74	2.1042	23 0 8.6	8.473
5	3 9 6.17	2.1102	23 8 34.1	8.375
6	3 11 12.96	2.1162	23 16 53.6	8.275
7	3 13 20.11	2.1221	23 25 7.1	8.174
8	3 15 27.61	2.1280	23 33 14.5	8.072
9	3 17 35.47	2.1341	23 41 15.8	7.970
10	3 19 43.70	2.1402	23 49 10.9	7.866
11	3 21 52.29	2.1462	23 56 59.7	7.761
12	3 24 1.24	2.1522	24 4 42.2	7.655
13	3 26 10.56	2.1583	24 12 18.3	7.547
14	3 28 20.24	2.1643	24 19 47.9	7.439
15	3 30 30.28	2.1703	24 27 11.0	7.330
16	3 32 40.68	2.1764	24 34 27.5	7.219
17	3 34 51.45	2.1825	24 41 37.3	7.107
18	3 37 2.58	2.1885	24 48 40.4	6.995
19	3 39 14.07	2.1946	24 55 36.7	6.881
20	3 41 25.93	2.2007	25 2 26.1	6.766
21	3 43 38.15	2.2067	25 9 8.6	6.650
22	3 45 50.73	2.2127	25 15 44.1	6.533
23	3 48 3.67	2.2187	25 22 12.6	6.415
24	3 50 16.97	2.2247	N.25 28 33.9	6.295

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 3.			
	h m s	s	° ′ ″	″
0	3 50 16.97	2.2247	N.25 28 33.9	6.295
1	3 52 30.63	2.2307	25 34 48.0	6.175
2	3 54 44.65	2.2366	25 40 54.9	6.053
3	3 56 59.02	2.2425	25 46 54.4	5.930
4	3 59 13.75	2.2484	25 52 46.5	5.807
5	4 1 28.83	2.2542	25 58 31.2	5.682
6	4 3 44.26	2.2601	26 4 8.4	5.557
7	4 6 0.04	2.2659	26 9 38.0	5.429
8	4 8 16.17	2.2717	26 14 59.9	5.301
9	4 10 32.64	2.2774	26 20 14.1	5.172
10	4 12 49.46	2.2832	26 25 20.5	5.042
11	4 15 6.62	2.2888	26 30 19.1	4.911
12	4 17 24.11	2.2943	26 35 9.8	4.778
13	4 19 41.94	2.2999	26 39 52.5	4.644
14	4 22 0.10	2.3055	26 44 27.1	4.509
15	4 24 18.60	2.3111	26 48 53.6	4.374
16	4 26 37.43	2.3164	26 53 12.0	4.238
17	4 28 56.57	2.3217	26 57 22.2	4.100
18	4 31 16.03	2.3270	27 1 24.0	3.961
19	4 33 35.81	2.3323	27 5 17.5	3.822
20	4 35 55.90	2.3375	27 9 2.6	3.681
21	4 38 16.31	2.3427	27 12 39.2	3.539
22	4 40 37.02	2.3477	27 16 7.3	3.397
23	4 42 58.03	2.3527	N.27 19 26.8	3.253
	TUESDAY 4.			
0	4 45 19.34	2.3576	N.27 22 37.7	3.109
1	4 47 40.94	2.3624	27 25 39.9	2.963
2	4 50 2.83	2.3672	27 28 33.3	2.816
3	4 52 25.00	2.3718	27 31 17.8	2.668
4	4 54 47.45	2.3765	27 33 53.5	2.521
5	4 57 10.18	2.3811	27 36 20.3	2.372
6	4 59 33.18	2.3856	27 38 38.1	2.222
7	5 1 56.45	2.3899	27 40 46.9	2.071
8	5 4 19.97	2.3941	27 42 46.6	1.918
9	5 6 43.74	2.3983	27 44 37.1	1.766
10	5 9 7.76	2.4024	27 46 18.5	1.613
11	5 11 32.03	2.4064	27 47 50.6	1.458
12	5 13 56.53	2.4103	27 49 13.4	1.303
13	5 16 21.26	2.4141	27 50 26.9	1.147
14	5 18 46.22	2.4179	27 51 31.0	0.991
15	5 21 11.41	2.4216	27 52 25.8	0.834
16	5 23 36.81	2.4251	27 53 11.1	0.676
17	5 26 2.42	2.4284	27 53 46.9	0.517
18	5 28 28.22	2.4317	27 54 13.1	0.
19	5 30 54.22	2.4349	27 54 29.8	0.1
20	5 33 20.41	2.4380	27 54 36.8	+ 0.
21	5 35 46.78	2.4410	27 54 34.2	− 0.
22	5 38 13.33	2.4439	27 54 21.9	0.
23	5 40 40.05	2.4467	27 53 59.9	0
24	5 43 6.93	2.4493	N.27 53 28.1	0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 43 6.93	2.4493	N.27 53 28.1	0.612
1	5 45 33.96	2.4518	27 52 46.5	0.775
2	5 48 1.15	2.4543	27 51 55.1	0.939
3	5 50 28.48	2.4566	27 50 53.8	1.104
4	5 52 55.94	2.4587	27 49 42.6	1.268
5	5 55 23.53	2.4608	27 48 21.6	1.433
6	5 57 51.24	2.4628	27 46 50.7	1.598
7	6 0 19.07	2.4647	27 45 9.8	1.765
8	6 2 47.00	2.4664	27 43 18.9	1.931
9	6 5 15.03	2.4679	27 41 18.1	2.097
10	6 7 43.15	2.4694	27 39 7.3	2.264
11	6 10 11.36	2.4707	27 36 46.4	2.432
12	6 12 39.64	2.4719	27 34 15.4	2.600
13	6 15 7.99	2.4731	27 31 34.4	2.767
14	6 17 36.41	2.4742	27 28 43.4	2.934
15	6 20 4.89	2.4751	27 25 42.3	3.102
16	6 22 33.42	2.4758	27 22 31.1	3.270
17	6 25 1.99	2.4764	27 19 9.9	3.438
18	6 27 30.59	2.4769	27 15 38.6	3.606
19	6 29 59.22	2.4773	27 11 57.2	3.774
20	6 32 27.87	2.4776	27 8 5.7	3.943
21	6 34 56.53	2.4777	27 4 4.1	4.111
22	6 37 25.20	2.4778	26 59 52.4	4.278
23	6 39 53.87	2.4777	N.26 55 30.7	4.446

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	6 42 22.53	2.4775	N.26 50 58.9	4.614
1	6 44 51.17	2.4772	26 46 17.0	4.782
2	6 47 19.80	2.4769	26 41 25.0	4.950
3	6 49 48.40	2.4764	26 36 23.0	5.117
4	6 52 16.96	2.4757	26 31 11.0	5.284
5	6 54 45.48	2.4749	26 25 49.0	5.451
6	6 57 13.95	2.4740	26 20 16.9	5.617
7	6 59 42.36	2.4730	26 14 34.9	5.783
8	7 2 10.71	2.4720	26 8 42.9	5.949
9	7 4 39.00	2.4708	26 2 41.0	6.115
10	7 7 7.21	2.4695	25 56 29.1	6.280
11	7 9 35.34	2.4682	25 50 7.4	6.444
12	7 12 3.39	2.4667	25 43 35.8	6.608
13	7 14 31.34	2.4650	25 36 54.4	6.772
14	7 16 59.19	2.4633	25 30 3.2	6.935
15	7 19 26.94	2.4616	25 23 2.2	7.098
16	7 21 54.58	2.4597	25 15 51.4	7.260
17	7 24 22.10	2.4577	25 8 31.0	7.421
	7 26 49.50	2.4556	25 1 0.9	7.582
	7 29 16.77	2.4534	24 53 21.2	7.742
	7 31 43.91	2.4512	24 45 31.9	7.902
	7 34 10.92	2.4489	24 37 33.0	8.060
	7 36 37.78	2.4464	24 29 24.7	8.218
	7 39 4.49	2.4439	24 21 6.9	8.375
	7 41 31.05	2.4413	N.24 12 39.7	8.531

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 41 31.05	2.4413	N.24 12 39.7	8.531
1	7 43 57.45	2.4387	24 4 3.2	8.687
2	7 46 23.69	2.4360	23 55 17.3	8.842
3	7 48 49.77	2.4332	23 46 22.2	8.995
4	7 51 15.68	2.4303	23 37 17.9	9.148
5	7 53 41.41	2.4274	23 28 4.4	9.300
6	7 56 6.97	2.4245	23 18 41.9	9.451
7	7 58 32.35	2.4214	23 9 10.3	9.602
8	8 0 57.54	2.4183	22 59 29.7	9.750
9	8 3 22.54	2.4151	22 49 40.3	9.897
10	8 5 47.35	2.4118	22 39 42.1	10.044
11	8 8 11.96	2.4086	22 29 35.0	10.191
12	8 10 36.38	2.4052	22 19 19.2	10.335
13	8 13 0.59	2.4018	22 8 54.8	10.478
14	8 15 24.60	2.3985	21 58 21.8	10.621
15	8 17 48.41	2.3951	21 47 40.2	10.763
16	8 20 12.01	2.3915	21 36 50.2	10.903
17	8 22 35.39	2.3879	21 25 51.8	11.042
18	8 24 58.56	2.3843	21 14 45.1	11.180
19	8 27 21.51	2.3808	21 3 30.2	11.317
20	8 29 44.25	2.3772	20 52 7.1	11.452
21	8 32 6.77	2.3735	20 40 36.0	11.585
22	8 34 29.07	2.3697	20 28 56.9	11.718
23	8 36 51.14	2.3660	N.20 17 9.8	11.850

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 39 12.99	2.3623	N.20 5 14.9	11.980
1	8 41 34.62	2.3586	19 53 12.2	12.109
2	8 43 56.02	2.3548	19 41 1.8	12.236
3	8 46 17.19	2.3510	19 28 43.9	12.361
4	8 48 38.14	2.3472	19 16 18.5	12.486
5	8 50 58.86	2.3434	19 3 45.6	12.610
6	8 53 19.35	2.3396	18 51 5.3	12.732
7	8 55 39.61	2.3358	18 38 17.8	12.852
8	8 57 59.64	2.3320	18 25 23.1	12.971
9	9 0 19.45	2.3282	18 12 21.3	13.088
10	9 2 39.03	2.3243	17 59 12.5	13.204
11	9 4 58.37	2.3204	17 45 56.8	13.318
12	9 7 17.48	2.3166	17 32 34.3	13.432
13	9 9 36.37	2.3129	17 19 5.0	13.543
14	9 11 55.03	2.3091	17 5 29.1	13.653
15	9 14 13.46	2.3053	16 51 46.7	13.761
16	9 16 31.67	2.3016	16 37 57.8	13.868
17	9 18 49.65	2.2978	16 24 2.6	13.973
18	9 21 7.41	2.2942	16 10 1.1	14.077
19	9 23 24.95	2.2905	15 55 53.4	14.179
20	9 25 42.27	2.2868	15 41 39.6	14.279
21	9 27 59.36	2.2831	15 27 19.9	14.377
22	9 30 16.24	2.2795	15 12 54.3	14.475
23	9 32 32.90	2.2759	14 58 22.9	14.571
24	9 34 49.35	2.2723	N.14 43 45.8	14.665

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 9.					TUESDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 34 49.35	2.2723	N.14 43 45.8	14.665	0	11 20 42.46	2.1636	N. 1 44 1.8	17.152
1	9 37 5.58	2.2688	14 29 3.1	14.757	1	11 22 52.26	2.1630	1 26 52.4	17.161
2	9 39 21.60	2.2653	14 14 14.9	14.847	2	11 25 2.02	2.1624	1 9 42.5	17.168
3	9 41 37.42	2.2619	13 59 21.4	14.936	3	11 27 11.75	2.1620	0 52 32.2	17.173
4	9 43 53.03	2.2584	13 44 22.6	15.024	4	11 29 21.46	2.1617	0 35 21.7	17.177
5	9 46 8.43	2.2550	13 29 18.5	15.111	5	11 31 31.16	2.1615	0 18 11.0	17.179
6	9 48 23.63	2.2517	13 14 9.3	15.194	6	11 33 40.84	2.1613	N. 0 1 0.2	17.179
7	9 50 38.63	2.2483	12 58 55.2	15.276	7	11 35 50.51	2.1612	S. 0 16 10.5	17.177
8	9 52 53.43	2.2451	12 43 36.2	15.357	8	11 38 0.18	2.1612	0 33 21.0	17.173
9	9 55 8.04	2.2419	12 28 12.4	15.436	9	11 40 9.85	2.1613	0 50 31.3	17.168
10	9 57 22.46	2.2387	12 12 43.9	15.513	10	11 42 19.53	2.1614	1 7 41.2	17.161
11	9 59 36.69	2.2355	11 57 10.8	15.588	11	11 44 29.22	2.1616	1 24 50.6	17.152
12	10 1 50.72	2.2323	11 41 33.3	15.662	12	11 46 38.92	2.1618	1 41 59.5	17.142
13	10 4 4.57	2.2294	11 25 51.4	15.734	13	11 48 48.64	2.1622	1 59 7.7	17.130
14	10 6 18.25	2.2265	11 10 5.2	15.805	14	11 50 58.39	2.1628	2 16 15.1	17.116
15	10 8 31.75	2.2236	10 54 14.8	15.873	15	11 53 8.18	2.1634	2 33 21.6	17.100
16	10 10 45.08	2.2207	10 38 20.4	15.940	16	11 55 18.00	2.1640	2 50 27.1	17.082
17	10 12 58.24	2.2179	10 22 22.0	16.006	17	11 57 27.86	2.1647	3 7 31.5	17.063
18	10 15 11.23	2.2152	10 6 19.7	16.069	18	11 59 37.76	2.1654	3 24 34.7	17.042
19	10 17 24.06	2.2125	9 50 13.7	16.130	19	12 1 47.71	2.1663	3 41 36.6	17.020
20	10 19 36.73	2.2098	9 34 4.1	16.190	20	12 3 57.72	2.1673	3 58 37.1	16.996
21	10 21 49.24	2.2072	9 17 50.9	16.248	21	12 6 7.79	2.1683	4 15 36.1	16.970
22	10 24 1.60	2.2047	9 1 34.3	16.305	22	12 8 17.92	2.1694	4 32 33.5	16.942
23	10 26 13.81	2.2022	N. 8 45 14.3	16.360	23	12 10 28.12	2.1706	S. 4 49 29.2	16.912
	MONDAY 10.					WEDNESDAY 12.			
0	10 28 25.87	2.1998	N. 8 28 51.1	16.412	0	12 12 38.39	2.1718	S. 5 6 23.0	16.881
1	10 30 37.79	2.1976	8 12 24.8	16.463	1	12 14 48.74	2.1732	5 23 14.9	16.848
2	10 32 49.58	2.1953	7 55 55.5	16.513	2	12 16 59.18	2.1746	5 40 4.8	16.814
3	10 35 1.23	2.1931	7 39 23.2	16.562	3	12 19 9.70	2.1761	5 56 52.6	16.778
4	10 37 12.75	2.1910	7 22 48.1	16.607	4	12 21 20.31	2.1777	6 13 38.2	16.740
5	10 39 24.15	2.1889	7 6 10.4	16.650	5	12 23 31.02	2.1794	6 30 21.4	16.700
6	10 41 35.42	2.1868	6 49 30.1	16.692	6	12 25 41.84	2.1811	6 47 2.2	16.659
7	10 43 46.57	2.1849	6 32 47.3	16.733	7	12 27 52.76	2.1829	7 3 40.5	16.616
8	10 45 57.61	2.1831	6 16 2.1	16.772	8	12 30 3.79	2.1848	7 20 16.1	16.571
9	10 48 8.55	2.1814	5 59 14.6	16.809	9	12 32 14.94	2.1868	7 36 49.0	16.525
10	10 50 19.38	2.1797	5 42 25.0	16.844	10	12 34 26.21	2.1888	7 53 19.1	16.477
11	10 52 30.11	2.1780	5 25 33.3	16.878	11	12 36 37.60	2.1909	8 9 46.3	16.427
12	10 54 40.74	2.1764	5 8 39.6	16.910	12	12 38 49.12	2.1931	8 26 10.4	16.376
13	10 56 51.28	2.1749	4 51 44.1	16.940	13	12 41 0.78	2.1954	8 42 31.4	16.323
14	10 59 1.73	2.1735	4 34 46.8	16.968	14	12 43 12.57	2.1977	8 58 49.2	16.268
15	11 1 12.10	2.1722	4 17 47.9	16.994	15	12 45 24.50	2.2001	9 15 3.6	16.212
16	11 3 22.39	2.1709	4 0 47.5	17.019	16	12 47 36.58	2.2026	9 31 14.6	16.154
17	11 5 32.61	2.1697	3 43 45.6	17.042	17	12 49 48.81	2.2051	9 47 22.1	16.094
18	11 7 42.76	2.1686	3 26 42.5	17.062	18	12 52 1.19	2.2077	10 3 25.9	16.03
19	11 9 52.84	2.1676	3 9 38.2	17.082	19	12 54 13.73	2.2104	10 19 26.0	15.97
20	11 12 2.87	2.1667	2 52 32.7	17.100	20	12 56 26.44	2.2132	10 35 22.3	15.9
21	11 14 12.84	2.1658	2 35 26.2	17.116	21	12 58 39.31	2.2160	10 51 14.6	15.8
22	11 16 22.76	2.1649	2 18 18.8	17.130	22	13 0 52.36	2.2189	11 7 2.9	15.7
23	11 18 32.63	2.1642	2 1 10.6	17.142	23	13 3 5.58	2.2218	11 22 47.1	15.7
24	11 20 42.46	2.1636	N. 1 44 1.8	17.152	24	13 5 18.98	2.2248	S.11 38 27.2	15.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 5 18.98	2.2248	S.11 38 27.2	15.632
1	13 7 32.56	2.2279	11 54 2.9	15.558
2	13 9 46.33	2.2311	12 9 34.2	15.483
3	13 12 0.29	2.2343	12 25 0.9	15.407
4	13 14 14.45	2.2376	12 40 23.0	15.330
5	13 16 28.80	2.2408	12 55 40.5	15.252
6	13 18 43.35	2.2442	13 10 53.2	15.171
7	13 20 58.11	2.2476	13 26 1.0	15.088
8	13 23 13.07	2.2511	13 41 3.8	15.004
9	13 25 28.24	2.2547	13 56 1.5	14.918
10	13 27 43.63	2.2583	14 10 54.0	14.832
11	13 29 59.24	2.2619	14 25 41.3	14.743
12	13 32 15.06	2.2655	14 40 23.2	14.653
13	13 34 31.10	2.2693	14 54 59.7	14.562
14	13 36 47.38	2.2732	15 9 30.6	14.468
15	13 39 3.89	2.2771	15 23 55.8	14.373
16	13 41 20.63	2.2809	15 38 15.3	14.277
17	13 43 37.60	2.2848	15 52 29.0	14.178
18	13 45 54.80	2.2887	16 6 36.7	14.078
19	13 48 12.24	2.2927	16 20 38.4	13.978
20	13 50 29.93	2.2968	16 34 34.1	13.877
21	13 52 47.86	2.3009	16 48 23.6	13.773
22	13 55 6.04	2.3050	17 2 6.8	13.667
23	13 57 24.46	2.3091	S.17 15 43.6	13.559

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 59 43.13	2.3133	S.17 29 13.9	13.451
1	14 2 2.05	2.3175	17 42 37.7	13.342
2	14 4 21.23	2.3217	17 55 54.9	13.230
3	14 6 40.66	2.3259	18 9 5.3	13.117
4	14 9 0.34	2.3302	18 22 8.9	13.002
5	14 11 20.28	2.3345	18 35 5.6	12.887
6	14 13 40.48	2.3388	18 47 55.3	12.769
7	14 16 0.94	2.3432	19 0 37.9	12.651
8	14 18 21.66	2.3475	19 13 13.4	12.531
9	14 20 42.64	2.3518	19 25 41.6	12.409
10	14 23 3.88	2.3562	19 38 2.5	12.287
11	14 25 25.38	2.3606	19 50 16.0	12.163
12	14 27 47.15	2.3650	20 2 22.0	12.037
13	14 30 9.18	2.3693	20 14 20.4	11.910
14	14 32 31.47	2.3737	20 26 11.2	11.782
15	14 34 54.02	2.3780	20 37 54.2	11.652
16	14 37 16.83	2.3824	20 49 29.4	11.521
17	14 39 39.91	2.3868	21 0 56.7	11.388
18	14 42 3.25	2.3912	21 12 16.0	11.254
19	14 44 26.85	2.3955	21 23 27.2	11.119
20	14 46 50.71	2.3998	21 34 30.3	10.983
21	14 49 14.83	2.4042	21 45 25.2	10.846
22	14 51 39.21	2.4084	21 56 11.8	10.707
23	14 54 3.84	2.4127	22 6 50.1	10.567
24	14 56 28.73	2.4169	S.22 17 19.9	10.426

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 56 28.73	2.4169	S.22 17 19.9	10.426
1	14 58 53.87	2.4211	22 27 41.2	10.283
2	15 1 19.26	2.4253	22 37 53.9	10.140
3	15 3 44.91	2.4295	22 47 58.0	9.996
4	15 6 10.80	2.4336	22 57 53.4	9.849
5	15 8 36.94	2.4377	23 7 39.9	9.702
6	15 11 3.33	2.4418	23 17 17.6	9.553
7	15 13 29.96	2.4458	23 26 46.3	9.404
8	15 15 56.82	2.4497	23 36 6.1	9.254
9	15 18 23.92	2.4536	23 45 16.8	9.103
10	15 20 51.25	2.4574	23 54 18.4	8.950
11	15 23 18.81	2.4612	24 3 10.8	8.796
12	15 25 46.60	2.4650	24 11 53.9	8.641
13	15 28 14.61	2.4687	24 20 27.7	8.486
14	15 30 42.84	2.4723	24 28 52.2	8.329
15	15 33 11.29	2.4759	24 37 7.2	8.171
16	15 35 39.95	2.4793	24 45 12.7	8.012
17	15 38 8.81	2.4827	24 53 8.7	7.853
18	15 40 37.88	2.4861	25 0 55.1	7.692
19	15 43 7.15	2.4894	25 8 31.8	7.531
20	15 45 36.61	2.4926	25 15 58.8	7.369
21	15 48 6.26	2.4957	25 23 16.1	7.207
22	15 50 36.09	2.4987	25 30 23.6	7.043
23	15 53 6.11	2.5017	S.25 37 21.2	6.878

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 55 36.30	2.5045	S.25 44 9.0	6.713
1	15 58 6.65	2.5073	25 50 46.8	6.547
2	16 0 37.17	2.5100	25 57 14.6	6.380
3	16 3 7.85	2.5126	26 3 32.4	6.212
4	16 5 38.68	2.5151	26 9 40.1	6.044
5	16 8 9.66	2.5174	26 15 37.7	5.876
6	16 10 40.77	2.5197	26 21 25.2	5.707
7	16 13 12.02	2.5219	26 27 2.5	5.537
8	16 15 43.40	2.5239	26 32 29.6	5.366
9	16 18 14.89	2.5258	26 37 46.4	5.195
10	16 20 46.50	2.5277	26 42 53.0	5.024
11	16 23 18.22	2.5296	26 47 49.3	4.852
12	16 25 50.05	2.5313	26 52 35.2	4.679
13	16 28 21.97	2.5328	26 57 10.8	4.507
14	16 30 53.98	2.5341	27 1 36.0	4.333
15	16 33 26.06	2.5353	27 5 50.8	4.160
16	16 35 58.21	2.5365	27 9 55.2	3.986
17	16 38 30.44	2.5377	27 13 49.1	3.812
18	16 41 2.73	2.5386	27 17 32.6	3.637
19	16 43 35.07	2.5393	27 21 5.6	3.462
20	16 46 7.45	2.5400	27 24 28.1	3.287
21	16 48 39.87	2.5406	27 27 40.1	3.112
22	16 51 12.32	2.5410	27 30 41.6	2.937
23	16 53 44.79	2.5412	27 33 32.6	2.762
24	16 56 17.27	2.5413	S.27 36 13.0	2.586

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 17.					**WEDNESDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 56 17.27	2.5413	S.27 36 13.0	2.586	0	18 56 1.77	2.4027	S.26 23 30.1	5.380
1	16 58 49.75	2.5414	27 38 42.9	2.411	1	18 58 25.77	2.3973	26 18 2.9	5.527
2	17 1 22.24	2.5414	27 41 2.3	2.236	2	19 0 49.44	2.3918	26 12 26.9	5.672
3	17 3 54.72	2.5412	27 43 11.2	2.060	3	19 3 12.79	2.3863	26 6 42.3	5.815
4	17 6 27.18	2.5408	27 45 9.5	1.884	4	19 5 35.80	2.3806	26 0 49.1	5.957
5	17 8 59.62	2.5403	27 46 57.3	1.708	5	19 7 58.46	2.3748	25 54 47.4	6.099
6	17 11 32.02	2.5397	27 48 34.5	1.532	6	19 10 20.78	2.3691	25 48 37.2	6.240
7	17 14 4.38	2.5389	27 50 1.2	1.357	7	19 12 42.76	2.3633	25 42 18.6	6.379
8	17 16 36.69	2.5381	27 51 17.4	1.182	8	19 15 4.38	2.3574	25 35 51.7	6.517
9	17 19 8.95	2.5371	27 52 23.1	1.007	9	19 17 25.65	2.3515	25 29 16.6	6.653
10	17 21 41.14	2.5359	27 53 18.3	0.833	10	19 19 46.56	2.3455	25 22 33.3	6.789
11	17 24 13.26	2.5346	27 54 3.1	0.659	11	19 22 7.11	2.3396	25 15 41.9	6.923
12	17 26 45.29	2.5331	27 54 37.4	0.485	12	19 24 27.31	2.3336	25 8 42.6	7.055
13	17 29 17.23	2.5316	27 55 1.3	0.311	13	19 26 47.14	2.3274	25 1 35.3	7.187
14	17 31 49.08	2.5300	27 55 14.7	− 0.137	14	19 29 6.60	2.3213	24 54 20.1	7.317
15	17 34 20.83	2.5282	27 55 17.7	+ 0.037	15	19 31 25.69	2.3151	24 46 57.2	7.446
16	17 36 52.46	2.5262	27 55 10.3	0.209	16	19 33 44.41	2.3088	24 39 26.6	7.574
17	17 39 23.97	2.5242	27 54 52.6	0.382	17	19 36 2.75	2.3026	24 31 48.3	7.702
18	17 41 55.36	2.5220	27 54 24.5	0.554	18	19 38 20.72	2.2963	24 24 2.4	7.827
19	17 44 26.61	2.5197	27 53 46.1	0.725	19	19 40 38.31	2.2900	24 16 9.1	7.950
20	17 46 57.72	2.5172	27 52 57.5	0.896	20	19 42 55.52	2.2837	24 8 8.4	8.072
21	17 49 28.67	2.5145	27 51 58.6	1.067	21	19 45 12.35	2.2773	24 0 0.4	8.193
22	17 51 59.46	2.5118	27 50 49.5	1.237	22	19 47 28.80	2.2709	23 51 45.2	8.313
23	17 54 30.09	2.5090	S.27 49 30.2	1.406	23	19 49 44.86	2.2645	S.23 43 22.8	8.432
	TUESDAY 18.					**THURSDAY 20.**			
0	17 57 0.54	2.5060	S.27 48 0.8	1.575	0	19 52 0.54	2.2581	S.23 34 53.3	8.550
1	17 59 30.81	2.5029	27 46 21.2	1.743	1	19 54 15.83	2.2517	23 26 16.8	8.666
2	18 2 0.89	2.4998	27 44 31.6	1.910	2	19 56 30.74	2.2452	23 17 33.4	8.780
3	18 4 30.78	2.4965	27 42 32.0	2.077	3	19 58 45.26	2.2388	23 8 43.2	8.893
4	18 7 0.47	2.4930	27 40 22.4	2.243	4	20 0 59.40	2.2324	22 59 46.2	9.006
5	18 9 29.94	2.4894	27 38 2.9	2.408	5	20 3 13.15	2.2259	22 50 42.5	9.116
6	18 11 59.20	2.4858	27 35 33.4	2.573	6	20 5 26.51	2.2194	22 41 32.3	9.224
7	18 14 28.24	2.4821	27 32 54.1	2.737	7	20 7 39.48	2.2130	22 32 15.6	9.332
8	18 16 57.05	2.4782	27 30 5.0	2.900	8	20 9 52.07	2.2066	22 22 52.4	9.440
9	18 19 25.62	2.4742	27 27 6.1	3.062	9	20 12 4.27	2.2001	22 13 22.8	9.545
10	18 21 53.95	2.4701	27 23 57.5	3.223	10	20 14 16.08	2.1937	22 3 47.0	9.649
11	18 24 22.03	2.4658	27 20 39.3	3.383	11	20 16 27.51	2.1872	21 54 5.0	9.752
12	18 26 49.85	2.4615	27 17 11.5	3.543	12	20 18 38.55	2.1807	21 44 16.8	9.853
13	18 29 17.41	2.4571	27 13 34.2	3.702	13	20 20 49.20	2.1743	21 34 22.6	9.952
14	18 31 44.70	2.4527	27 9 47.3	3.860	14	20 22 59.47	2.1680	21 24 22.5	10.051
15	18 34 11.73	2.4482	27 5 51.0	4.016	15	20 25 9.36	2.1616	21 14 16.5	10.148
16	18 36 38.48	2.4434	27 1 45.4	4.172	16	20 27 18.86	2.1552	21 4 4.7	10.244
17	18 39 4.94	2.4386	26 57 30.4	4.327	17	20 29 27.98	2.1488	20 53 47.2	10.338
18	18 41 31.11	2.4337	26 53 6.2	4.480	18	20 31 36.72	2.1425	20 43 24.1	10.432
19	18 43 56.99	2.4288	26 48 32.8	4.632	19	20 33 45.08	2.1362	20 32 55.4	10.524
20	18 46 22.57	2.4237	26 43 50.3	4.784	20	20 35 53.06	2.1298	20 22 21.2	10.614
21	18 48 47.84	2.4186	26 38 58.7	4.935	21	20 38 0.66	2.1236	20 11 41.7	10.703
22	18 51 12.80	2.4134	26 33 58.1	5.085	22	20 40 7.89	2.1174	20 0 56.9	10.791
23	18 53 37.44	2.4081	26 28 48.5	5.233	23	20 42 14.75	2.1112	19 50 6.8	10.878
24	18 56 1.77	2.4027	S.26 23 30.1	5.380	24	20 44 21.23	2.1049	S.19 39 11.5	10.963

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 21.					**SUNDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 44 21.23	2.1049	S. 19 39 11.5	10.963	0	22 19 5.82	1.8634	S. 9 38 9.5	13.636
1	20 46 27.34	2.0988	19 28 11.2	11.047	1	22 20 57.51	1.8598	9 24 30.5	13.664
2	20 48 33.08	2.0927	19 17 5.9	11.130	2	22 22 48.99	1.8563	9 10 49.8	13.692
3	20 50 38.46	2.0867	19 5 55.6	11.212	3	22 24 40.27	1.8529	8 57 7.4	13.720
4	20 52 43.48	2.0806	18 54 40.5	11.291	4	22 26 31.34	1.8495	8 43 23.4	13.746
5	20 54 48.13	2.0745	18 43 20.7	11.370	5	22 28 22.21	1.8462	8 29 37.9	13.770
6	20 56 52.42	2.0685	18 31 56.1	11.448	6	22 30 12.88	1.8429	8 15 51.0	13.794
7	20 58 56.35	2.0626	18 20 26.9	11.524	7	22 32 3.35	1.8397	8 2 2.6	13.817
8	21 0 59.93	2.0567	18 8 53.2	11.599	8	22 33 53.64	1.8366	7 48 12.9	13.839
9	21 3 3.16	2.0509	17 57 15.0	11.673	9	22 35 43.74	1.8335	7 34 21.9	13.860
10	21 5 6.04	2.0451	17 45 32.4	11.746	10	22 37 33.66	1.8305	7 20 29.7	13.881
11	21 7 8.57	2.0393	17 33 45.5	11.817	11	22 39 23.40	1.8276	7 6 36.2	13.901
12	21 9 10.75	2.0335	17 21 54.4	11.886	12	22 41 12.97	1.8247	6 52 41.6	13.919
13	21 11 12.59	2.0278	17 9 59.2	11.955	13	22 43 2.37	1.8219	6 38 46.0	13.936
14	21 13 14.09	2.0222	16 57 59.8	12.023	14	22 44 51.60	1.8192	6 24 49.3	13.952
15	21 15 15.25	2.0166	16 45 56.4	12.090	15	22 46 40.67	1.8166	6 10 51.7	13.967
16	21 17 16.08	2.0111	16 33 49.0	12.155	16	22 48 29.59	1.8140	5 56 53.2	13.982
17	21 19 16.58	2.0056	16 21 37.8	12.218	17	22 50 18.35	1.8114	5 42 53.8	13.997
18	21 21 16.75	2.0002	16 9 22.8	12.281	18	22 52 6.96	1.8089	5 28 53.5	14.011
19	21 23 16.60	1.9947	15 57 4.1	12.342	19	22 53 55.42	1.8066	5 14 52.5	14.022
20	21 25 16.12	1.9894	15 44 41.7	12.403	20	22 55 43.75	1.8043	5 0 50.9	14.033
21	21 27 15.32	1.9841	15 32 15.7	12.462	21	22 57 31.94	1.8021	4 46 48.6	14.043
22	21 29 14.21	1.9789	15 19 46.2	12.520	22	22 59 20.00	1.7999	4 32 45.7	14.052
23	21 31 12.79	1.9737	S. 15 7 13.3	12.577	23	23 1 7.93	1.7978	S. 4 18 42.3	14.061
	SATURDAY 22.					**MONDAY 24.**			
0	21 33 11.06	1.9686	S. 14 54 37.0	12.632	0	23 2 55.73	1.7957	S. 4 4 38.4	14.069
1	21 35 9.02	1.9635	14 41 57.4	12.687	1	23 4 43.41	1.7937	3 50 34.0	14.076
2	21 37 6.68	1.9585	14 29 14.6	12.740	2	23 6 30.98	1.7918	3 26 29.3	14.082
3	21 39 4.04	1.9536	14 16 28.6	12.792	3	23 8 18.43	1.7899	3 22 24.2	14.087
4	21 41 1.11	1.9487	14 3 39.5	12.843	4	23 10 5.77	1.7882	3 8 18.8	14.092
5	21 42 57.88	1.9438	13 50 47.4	12.893	5	23 11 53.01	1.7865	2 54 13.2	14.095
6	21 44 54.36	1.9390	13 37 52.3	12.942	6	23 13 40.15	1.7849	2 40 7.4	14.098
7	21 46 50.56	1.9343	13 24 54.3	12.990	7	23 15 27.20	1.7833	2 26 1.4	14.100
8	21 48 46.48	1.9296	13 11 53.5	13.036	8	23 17 14.15	1.7818	2 11 55.4	14.101
9	21 50 42.11	1.9249	12 58 50.0	13.081	9	23 19 1.01	1.7803	1 57 49.3	14.102
10	21 52 37.47	1.9204	12 45 43.8	13.126	10	23 20 47.79	1.7790	1 43 43.2	14.101
11	21 54 32.56	1.9160	12 32 34.9	13.169	11	23 22 34.49	1.7777	1 29 37.2	14.100
12	21 56 27.39	1.9116	12 19 23.5	13.211	12	23 24 21.11	1.7764	1 15 31.2	14.098
13	21 58 21.96	1.9072	12 6 9.6	13.252	13	23 26 7.66	1.7753	1 1 25.4	14.095
14	22 0 16.26	1.9028	11 52 53.2	13.292	14	23 27 54.15	1.7742	0 47 19.8	14.091
15	22 2 10.30	1.8986	11 39 34.5	13.331	15	23 29 40.57	1.7732	0 33 14.5	14.087
16	22 4 4.09	1.8945	11 26 13.5	13.369	16	23 31 26.93	1.7722	0 19 9.4	14.082
17	22 5 57.64	1.8904	11 12 50.2	13.407	17	23 33 13.24	1.7713	S. 0 5 4.7	14.075
18	22 7 50.94	1.8863	10 59 24.7	13.443	18	23 34 59.49	1.7704	N. 0 8 59.6	14.068
19	22 9 44.00	1.8823	10 45 57.1	13.478	19	23 36 45.69	1.7697	0 23 3.5	14.061
20	22 11 36.82	1.8784	10 32 27.4	13.511	20	23 38 31.85	1.7691	0 37 7.0	14.053
21	22 13 29.41	1.8746	10 18 55.8	13.543	21	23 40 17.98	1.7685	0 51 9.9	14.043
22	22 15 21.77	1.8708	10 5 22.3	13.575	22	23 42 4.07	1.7679	1 5 12.2	14.033
23	22 17 13.91	1.8671	9 51 46.8	13.607	23	23 43 50.13	1.7674	1 19 13.9	14.023
24	22 19 5.82	1.8634	S. 9 38 9.5	13.636	24	23 45 36.16	1.7669	N. 1 33 15.0	14.012

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 45 36.16	1.7669	N. 1 33 15.0	14.012
1	23 47 22.16	1.7666	1 47 15.4	14.000
2	23 49 8.15	1.7664	2 1 15.0	13.987
3	23 50 54.13	1.7662	2 15 13.8	13.973
4	23 52 40.10	1.7661	2 29 11.7	13.958
5	23 54 26.06	1.7659	2 43 8.8	13.944
6	23 56 12.01	1.7658	2 57 5.0	13.928
7	23 57 57.96	1.7659	3 11 0.2	13.911
8	23 59 43.92	1.7661	3 24 54.3	13.893
9	0 1 29.89	1.7663	3 38 47.4	13.876
10	0 3 15.87	1.7665	3 52 39.4	13.857
11	0 5 1.87	1.7668	4 6 30.2	13.837
12	0 6 47.89	1.7672	4 20 19.9	13.817
13	0 8 33.94	1.7676	4 34 8.3	13.796
14	0 10 20.01	1.7681	4 47 55.4	13.774
15	0 12 6.11	1.7687	5 1 41.2	13.751
16	0 13 52.25	1.7694	5 15 25.6	13.728
17	0 15 38.44	1.7702	5 29 8.6	13.705
18	0 17 24.67	1.7709	5 42 50.2	13.681
19	0 19 10.95	1.7718	5 56 30.3	13.655
20	0 20 57.28	1.7727	6 10 8.8	13.628
21	0 22 43.67	1.7737	6 23 45.7	13.602
22	0 24 30.12	1.7747	6 37 21.0	13.574
23	0 26 16.64	1.7758	N. 6 50 54.6	13.546

WEDNESDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 28 3.22	1.7769	N. 7 4 26.5	13.517
1	0 29 49.87	1.7782	7 17 56.7	13.487
2	0 31 36.60	1.7796	7 31 25.0	13.457
3	0 33 23.42	1.7810	7 44 51.5	13.426
4	0 35 10.32	1.7824	7 58 16.1	13.394
5	0 36 57.30	1.7838	8 11 38.7	13.361
6	0 38 44.37	1.7853	8 24 59.4	13.328
7	0 40 31.54	1.7870	8 38 18.1	13.294
8	0 42 18.81	1.7887	8 51 34.7	13.259
9	0 44 6.18	1.7904	9 4 49.2	13.224
10	0 45 53.66	1.7922	9 18 1.6	13.187
11	0 47 41.25	1.7942	9 31 11.7	13.150
12	0 49 28.96	1.7962	9 44 19.6	13.113
13	0 51 16.79	1.7982	9 57 25.3	13.075
14	0 53 4.74	1.8002	10 10 28.6	13.035
15	0 54 52.81	1.8023	10 23 29.5	12.995
16	0 56 41.01	1.8045	10 36 28.0	12.955
17	0 58 29.35	1.8067	10 49 24.1	12.914
18	1 0 17.82	1.8090	11 2 17.7	12.872
19	1 2 6.43	1.8114	11 15 8.8	12.829
20	1 3 55.19	1.8139	11 27 57.2	12.785
21	1 5 44.10	1.8164	11 40 43.0	12.742
22	1 7 33.16	1.8190	11 53 26.2	12.697
23	1 9 22.38	1.8216	12 6 6.6	12.650
24	1 11 11.75	1.8242	N. 12 18 44.2	12.603

THURSDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination
	h m s	s	° ′ ″
0	1 11 11.75	1.8242	N. 12 18 44.2
1	1 13 1.28	1.8270	12 31 19.0
2	1 14 50.99	1.8299	12 43 51.0
3	1 16 40.87	1.8328	12 56 20.1
4	1 18 30.92	1.8357	13 8 46.3
5	1 20 21.15	1.8386	13 21 9.4
6	1 22 11.55	1.8416	13 33 29.5
7	1 24 2.14	1.8448	13 45 46.5
8	1 25 52.92	1.8480	13 58 0.4
9	1 27 43.90	1.8512	14 10 11.2
10	1 29 35.07	1.8545	14 22 18.7
11	1 31 26.44	1.8578	14 34 22.9
12	1 33 18.00	1.8611	14 46 23.9
13	1 35 9.77	1.8646	14 58 21.5
14	1 37 1.75	1.8682	15 10 15.7
15	1 38 53.95	1.8717	15 22 6.4
16	1 40 46.36	1.8753	15 33 53.6
17	1 42 38.99	1.8789	15 45 37.3
18	1 44 31.83	1.8826	15 57 17.4
19	1 46 24.90	1.8864	16 8 53.9
20	1 48 18.20	1.8903	16 20 26.7
21	1 50 11.74	1.8942	16 31 55.7
22	1 52 5.51	1.8982	16 43 20.9
23	1 53 59.52	1.9021	N. 16 54 42.3

FRIDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination
0	1 55 53.76	1 9061	N. 17 5 59.8
1	1 57 48.25	1.9102	17 17 13.3
2	1 59 42.99	1.9144	17 28 22.9
3	2 1 37.98	1.9186	17 39 28.5
4	2 3 33.22	1.9228	17 50 30.0
5	2 5 28.72	1.9271	18 1 27.3
6	2 7 24.47	1.9313	18 12 20.5
7	2 9 20.48	1.9357	18 23 9.5
8	2 11 16.76	1.9402	18 33 54.1
9	2 13 13.31	1.9447	18 44 34.4
10	2 15 10.13	1.9492	18 55 10.3
11	2 17 7.22	1 9537	19 5 41.7
12	2 19 4.58	1.9583	19 16 8.7
13	2 21 2.22	1.9630	19 26 31.2
14	2 23 0.14	1.9677	19 36 49.0
15	2 24 58.35	1.9725	19 47 2.2
16	2 26 56.84	1.9772	19 57 10.7
17	2 28 55.62	1.9820	20 7 14.4
18	2 30 54.68	1.9868	20 17 13.4
19	2 32 54.04	1.9917	20 27 7.5
20	2 34 53.69	1.9967	20 36 56.7
21	2 36 53.64	2.0017	20 46 40.9
22	2 38 53.89	2.0067	20 56 20.0
23	2 40 54.44	2.0117	21 5 54.1
24	2 42 55.29	2.0167	N. 21 15 23.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 29.					**MONDAY 31.**			
h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
2 42 55.29	2.0167	N.21 15 23.1	9.440	0	4 25 50.77	2.2707	N.26 51 28.3	4.195
2 44 56.44	2.0218	21 24 46.9	9.353	1	4 28 7.16	2.2756	26 55 36.0	4.062
2 46 57.90	2.0269	21 34 5.4	9.265	2	4 30 23.84	2.2804	26 59 35.7	3.928
2 48 59.67	2.0321	21 43 18.7	9.177	3	4 32 40.81	2.2852	27 3 27.4	3.794
2 51 1.75	2.0372	21 52 26.7	9.087	4	4 34 58.06	2.2899	27 7 11 0	3.659
2 53 4.14	2.0424	22 1 29.2	8.996	5	4 37 15.60	2.2946	27 10 46.5	3.522
2 55 6.84	2.0476	22 10 26.2	8.904	6	4 39 33.42	2.2993	27 14 13.7	3.385
2 57 9.85	2.0529	22 19 17.7	8.812	7	4 41 51.51	2.3038	27 17 32.7	3.247
2 59 13.18	2.0582	22 28 3.7	8.719	8	4 44 9.87	2.3084	27 20 43.4	3.109
3 1 16.83	2.0635	22 36 44.0	8.624	9	4 46 28.51	2.3129	27 23 45.8	2.970
3 3 20.80	2.0688	22 45 18.6	8.529	10	4 48 47.42	2.3172	27 26 39.8	2.829
3 5 25.09	2.0741	22 53 47.5	8.433	11	4 51 6.58	2.3214	27 29 25.3	2.687
3 7 29.69	2.0793	23 2 10.6	8.336	12	4 53 25.99	2.3257	27 32 2.3	2.545
3 9 34.61	2.0847	23 10 27.8	8.238	13	4 55 45.66	2.3299	27 34 30.7	2.403
3 11 39.86	2.0902	23 18 39.1	8.139	14	4 58 5.58	2.3341	27 36 50.6	2.260
3 13 45.44	2.0957	23 26 44.5	8.039	15	5 0 25.75	2.3382	27 39 1.9	2.116
3 15 51.34	2.1010	23 34 43.8	7.937	16	5 2 46.16	2.3421	27 41 4.5	1.970
3 17 57.56	2.1064	23 42 37.0	7.835	17	5 5 6.80	2.3459	27 42 58.3	1.823
3 20 4.11	2.1118	23 50 24.0	7.732	18	5 7 27.67	2.3498	27 44 43.3	1.676
3 22 10.98	2.1172	23 58 4.8	7.628	19	5 9 48.77	2.3536	27 46 19.5	1.529
3 24 18.18	2.1227	24 5 39.4	7.524	20	5 12 10.10	2.3573	27 47 46.8	1.382
3 26 25.71	2.1282	24 13 7.7	7.418	21	5 14 31.65	2.3609	27 49 5.3	1.233
3 28 33.56	2.1336	24 20 29.6	7.311	22	5 16 53.41	2.3644	27 50 14.8	1.083
3 30 41.74	2.1390	N.24 27 45.0	7.203	23	5 19 15.38	2.3678	N.27 51 15.3	0.933
SUNDAY 30.					**TUESDAY, SEPTEMBER 1.**			
3 32 50.24	2.1444	N.24 34 54.0	7.095	0	5 21 37.55	2.3712	N.27 52 6.8	0.782
3 34 59.07	2.1499	24 41 56.4	6.985					
3 37 8.23	2.1554	24 48 52.2	6.874					
3 39 17.72	2.1608	24 55 41.3	6.762					
3 41 27.53	2.1662	25 2 23.7	6.650					
3 43 37.67	2.1717	25 8 59.3	6.536					
3 45 48.13	2.1771	25 15 28.0	6.421					
3 47 58.92	2.1825	25 21 49.8	6.305					
3 50 10 03	2.1878	25 28 4.6	6.189					
3 52 21.46	2.1932	25 34 12.5	6.072					
3 54 33.22	2.1986	25 40 13.3	5.953					
3 56 45.30	2.2039	25 46 6.9	5.833					
3 58 57.69	2.2092	25 51 53.3	5.713					
4 1 10.40	2.2145	25 57 32 4	5.592					
4 3 23.43	2.2198	26 3 4.3	5.470					
4 5 36.78	2.2251	26 8 28.8	5.347					
4 7 50.44	2.2303	26 13 45.9	5.222					
4 10 4.41	2.2354	26 18 55.5	5.097					
4 12 18.69	2.2406	26 23 57.5	4.970					
4 14 33.28	2.2457	26 28 51.9	4.843					
4 16 48.17	2.2507	26 33 38.7	4.716					
4 19 3.37	2.2558	26 38 17.8	4.587					
4 21 18.87	2.2608	26 42 49.1	4.457					
4 23 34.67	2.2658	26 47 12.6	4.327					
4 25 50.77	2.2707	N.26 51 28.3	4.195					

PHASES OF THE MOON.

			d	h	m
☾	Last Quarter . . .	Aug.	1	6	34.3
●	New Moon		8	17	1.8
☽	First Quarter		15	9	2.5
○	Full Moon		22	19	4.4
☾	Last Quarter		30	22	55.2

			d	h
☾	Perigee	Aug.	11	6.4
☾	Apogee		27	2.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	*a* Aquilæ W.	93 1 47	3728	94 18 4	3726	95 34 24	3723	96 50 47	3721
	Fomalhaut W.	68 7 57	3412	69 30 0	3400	70 52 17	3386	72 14 49	3373
	a Pegasi W.	45 43 28	3422	47 5 20	3398	48 27 39	3375	49 50 24	3353
	Sun E.	93 0 17	3402	91 38 3	3396	90 15 42	3390	88 53 14	3382
2	*a* Aquilæ W.	103 13 9	3716	104 29 39	3716	105 46 9	3718	107 2 37	3720
	Fomalhaut W.	79 11 5	3312	80 35 3	3300	81 59 15	3287	83 23 42	3275
	a Pegasi W.	56 50 7	3255	58 15 11	3237	59 40 36	3220	61 6 22	3201
	Sun E.	81 58 35	3338	80 35 8	3328	79 11 29	3317	77 47 37	3306
3	Fomalhaut W.	90 29 31	3214	91 55 24	3202	93 21 31	3190	94 47 52	3178
	a Pegasi W.	68 20 28	3114	69 48 20	3098	71 16 32	3081	72 45 5	3065
	a Arietis W.	24 54 59	2982	26 25 34	2960	27 56 37	2939	29 28 6	2919
	Sun E.	70 44 55	3244	69 19 38	3231	67 54 5	3216	66 28 15	3202
4	Fomalhaut W.	102 3 8	3122	103 30 51	3111	104 58 47	3101	106 26 56	3091
	a Pegasi W.	80 12 59	2981	81 43 36	2964	83 14 34	2947	84 45 53	2931
	a Arietis W.	37 11 40	2827	38 45 33	2808	40 19 50	2791	41 54 30	2773
	Sun E.	59 14 39	3124	57 46 59	3109	56 19 0	3092	54 50 41	3075
5	*a* Pegasi W.	92 27 39	2850	94 1 2	2835	95 34 45	2819	97 8 48	2805
	a Arietis W.	49 53 40	2685	51 30 40	2667	53 8 4	2649	54 45 52	2632
	Mars W.	33 20 21	2974	34 51 6	2949	36 22 23	2925	37 54 10	2902
	Sun E.	47 23 52	2989	45 53 26	2971	44 22 37	2954	42 51 27	2936
6	*a* Pegasi W.	105 3 48	2734	106 39 43	2722	108 15 54	2710	109 52 21	2698
	a Arietis W.	63 0 44	2546	64 40 53	2529	66 21 26	2512	68 2 22	2496
	Mars W.	45 40 12	2795	47 14 47	2775	48 49 48	2754	50 25 16	2735
	Aldebaran W.	32 25 1	2785	33 59 48	2748	35 35 24	2713	37 11 47	2681
	Sun E.	35 9 57	2848	33 36 31	2830	32 2 42	2813	30 28 31	2795
7	*a* Arietis W.	76 32 44	2417	78 15 55	2401	79 59 28	2387	81 43 22	2372
	Mars W.	58 28 49	2644	60 6 44	2627	61 45 2	2610	63 23 43	2593
	Aldebaran W.	45 23 47	2545	47 3 58	2522	48 44 40	2500	50 25 52	2480
	Sun E.	22 32 2	2713	20 55 39	2697	19 18 55	2682	17 41 51	2667
10	Sun W.	17 25 30	2450	19 7 54	2445	20 50 25	2441	22 33 2	2436
	Spica E.	46 42 19	2160	44 52 51	2157	43 3 18	2154	41 13 41	2151
	Saturn E.	67 20 16	2208	65 32 0	2206	63 43 41	2204	61 55 19	2202
	Antares E.	92 32 49	2153	90 43 10	2149	88 53 25	2145	87 3 35	2142
11	Sun W.	31 7 3	2429	32 49 56	2429	34 32 49	2430	36 15 41	2431
	Saturn E.	52 53 20	2207	51 5 3	2210	49 16 51	2214	47 28 45	2220
	Antares E.	77 53 33	2136	76 3 28	2136	74 13 24	2137	72 23 21	2138
12	Sun W.	44 49 18	2445	46 31 48	2450	48 14 12	2454	49 56 30	2460
	Antares E.	63 13 50	2151	61 24 9	2156	59 34 35	2160	57 45 7	2165
	a Aquilæ E.	113 44 22	2988	112 13 54	2969	110 43 3	2954	109 11 53	2942
13	Sun W.	58 25 56	2491	60 7 22	2499	61 48 37	2506	63 29 42	2515
	Antares E.	48 39 48	2194	46 51 12	2201	45 2 46	2208	43 14 31	2216
	a Aquilæ E.	101 32 57	2909	100 0 50	2909	98 28 42	2909	96 56 34	2911

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	α Aquilæ	W.	98 7 12	3719	99 23 39	3717	100 40 8	3716	101 56 38	3715
	Fomalhaut	W.	73 37 36	3361	75 0 37	3349	76 23 52	3337	77 47 21	3324
	α Pegasi	W.	51 13 34	3332	52 37 8	3313	54 1 5	3293	55 25 25	3274
	Sun	E.	87 30 37	3374	86 7 51	3366	84 44 56	3358	83 21 51	3348
2	α Aquilæ	W.	108 19 3	3723	109 35 26	3727	110 51 44	3732	112 7 57	3739
	Fomalhaut	W.	84 48 23	3263	86 13 18	3250	87 38 28	3238	89 3 52	3225
	α Pegasi	W.	62 32 30	3184	63 58 58	3167	65 25 47	3149	66 52 57	3132
	Sun	E.	76 23 33	3294	74 59 15	3282	73 34 43	3270	72 9 56	3258
3	Fomalhaut	W.	96 14 28	3166	97 41 18	3155	99 8 21	3143	100 35 38	3133
	α Pegasi	W.	74 13 58	3047	75 43 12	3030	77 12 47	3014	78 42 43	2997
	α Arietis	W.	31 0 1	2900	32 32 20	2881	34 5 3	2862	35 38 10	2845
	Sun	E.	65 2 8	3188	63 35 44	3172	62 9 1	3157	60 42 0	3140
4	Fomalhaut	W.	107 55 16	3082	109 23 47	3073	110 52 29	3065	112 21 21	3058
	α Pegasi	W.	86 17 33	2914	87 49 34	2898	89 21 55	2882	90 54 37	2866
	α Arietis	W.	43 29 33	2755	45 5 0	2738	46 40 50	2720	48 17 3	2702
	Sun	E.	53 22 1	3059	51 53 1	3041	50 23 39	3024	48 53 56	3007
5	α Pegasi	W.	98 43 10	2789	100 17 52	2775	101 52 52	2761	103 28 11	2747
	α Arietis	W.	56 24 3	2615	58 2 38	2598	59 41 36	2580	61 20 58	2563
	Mars	W.	39 26 26	2880	40 59 11	2858	42 32 24	2837	44 6 4	2815
	Sun	E.	41 19 54	2919	39 47 59	2901	38 15 41	2883	36 43 0	2866
6	α Pegasi	W.	111 29 4	2687	113 6 1	2678	114 43 11	2668	116 20 34	2660
	α Arietis	W.	69 43 41	2480	71 25 23	2463	73 7 28	2448	74 49 55	2432
	Mars	W.	52 1 9	2716	53 37 27	2698	55 14 10	2680	56 51 17	2661
	Aldebaran	W.	38 48 53	2649	40 26 41	2621	42 5 7	2594	43 44 10	2569
	Sun	E.	28 53 57	2779	27 19 1	2762	25 43 43	2745	24 8 3	2729
7	α Arietis	W.	83 27 37	2357	85 12 13	2344	86 57 8	2331	88 42 23	2318
	Mars	W.	65 2 47	2578	66 42 12	2563	68 21 58	2548	70 2 5	2533
	Aldebaran	W.	52 7 35	2460	53 49 45	2441	55 32 21	2423	57 15 23	2406
	Sun	E.	16 4 27	2653	14 26 44	2640	12 48 43	2627	11 10 25	2615
10	Sun	W.	24 15 45	2434	25 58 31	2432	27 41 20	2431	29 24 11	2430
	Spica	E.	39 24 0	2150	37 34 17	2149	35 44 32	2149	33 54 47	2149
	Saturn	E.	60 6 55	2202	58 18 30	2202	56 30 5	2202	54 41 41	2204
	Antares	E.	85 13 40	2139	83 23 41	2138	81 33 40	2137	79 43 37	2136
11	Sun	W.	37 58 31	2433	39 41 18	2436	41 24 2	2438	43 6 42	2441
	Saturn	E.	45 40 47	2226	43 52 58	2234	42 5 21	2242	40 17 56	2252
	Antares	E.	70 33 20	2140	68 43 22	2142	66 53 27	2145	65 3 36	2148
12	Sun	W.	51 38 40	2465	53 20 42	2471	55 2 36	2477	56 44 21	2485
	Antares	E.	55 55 46	2170	54 6 33	2176	52 17 29	2182	50 28 34	2188
	α Aquilæ	E.	107 40 27	2931	106 8 48	2923	104 36 58	2916	103 5 0	2912
13	Sun	W.	65 10 35	2522	66 51 17	2530	68 31 48	2540	70 12 6	2548
	Antares	E.	41 26 27	2224	39 38 35	2231	37 50 54	2240	36 3 26	2248
	α Aquilæ	E.	95 24 29	2914	93 52 28	2920	92 20 34	2926	90 48 48	2934

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
14	Sun	W.	71 52 12	2558	73 32 5	2567	75 11 45	2577	76 51 12	2586
	α Aquilæ	E.	89 17 12	2942	87 45 47	2954	86 14 36	2965	84 43 39	2977
	Fomalhaut	E.	114 20 3	2643	112 42 7	2642	111 4 9	2642	109 26 11	2643
15	Sun	W.	85 5 5	2637	86 43 10	2647	88 21 1	2657	89 58 38	2668
	Spica	W.	25 54 14	2350	27 39 1	2357	29 23 38	2364	31 8 4	2373
	α Aquilæ	E.	77 13 30	3063	75 44 35	3084	74 16 6	3106	72 48 4	3131
	Fomalhaut	E.	101 17 10	2662	99 39 39	2669	98 2 17	2675	96 25 4	2683
16	Sun	W.	98 3 11	2721	99 39 23	2732	101 15 21	2742	102 51 5	2753
	Spica	W.	39 47 8	2417	41 30 18	2426	43 13 15	2436	44 55 59	2445
	α Aquilæ	E.	65 35 55	3279	64 11 19	3314	62 47 24	3353	61 24 14	3393
	Fomalhaut	E.	88 21 47	2729	86 45 46	2741	85 10 0	2752	83 34 29	2764
	α Pegasi	E.	110 29 54	2626	108 51 34	2632	107 13 22	2638	105 35 18	2643
17	Sun	W.	110 46 15	2805	112 20 36	2816	113 54 43	2827	115 28 36	2837
	Spica	W.	53 26 16	2492	55 7 40	2502	56 48 50	2512	58 29 47	2521
	Saturn	W.	33 19 45	2620	34 58 13	2621	36 36 39	2623	38 15 3	2625
	Fomalhaut	E.	75 41 6	2833	74 7 21	2848	72 33 56	2865	71 0 52	2881
	α Pegasi	E.	97 27 16	2681	95 50 11	2689	94 13 17	2698	92 36 35	2708
18	Sun	W.	123 14 44	2887	124 47 19	2898	126 19 40	2909	127 51 48	2918
	Spica	W.	66 51 17	2568	68 30 56	2577	70 10 23	2586	71 49 37	2595
	Saturn	W.	46 25 53	2648	48 3 43	2655	49 41 24	2660	51 18 57	2667
	Fomalhaut	E.	63 21 15	2979	61 50 36	3001	60 20 25	3025	58 50 43	3050
	α Pegasi	E.	84 36 16	2757	83 0 52	2769	81 25 43	2779	79 50 48	2790
19	Spica	W.	80 2 41	2640	81 40 41	2649	83 18 29	2658	84 56 5	2668
	Saturn	W.	59 24 24	2703	61 1 0	2710	62 37 26	2718	64 13 42	2726
	Antares	W.	34 8 59	2638	35 47 3	2646	37 24 56	2655	39 2 36	2663
	Fomalhaut	E.	51 30 32	3200	50 4 23	3237	48 38 58	3276	47 14 19	3319
	α Pegasi	E.	72 0 1	2852	70 26 40	2866	68 53 37	2879	67 20 51	2893
	α Arietis	E.	113 55 8	2655	112 17 28	2664	110 40 0	2673	109 2 44	2681
20	Spica	W.	93 1 5	2711	94 37 30	2720	96 13 43	2729	97 49 45	2738
	Saturn	W.	72 12 24	2766	73 47 37	2774	75 22 39	2782	76 57 30	2791
	Antares	W.	47 8 0	2708	48 44 29	2716	50 20 47	2725	51 56 54	2734
	α Pegasi	E.	59 41 48	2973	58 11 2	2991	56 40 38	3011	55 10 39	3030
	α Arietis	E.	100 59 14	2724	99 23 6	2733	97 47 10	2741	96 11 25	2750
21	Spica	W.	105 47 2	2781	107 21 55	2789	108 56 37	2798	110 31 8	2806
	Saturn	W.	84 49 3	2832	86 22 49	2841	87 56 24	2849	89 29 48	2858
	Antares	W.	59 54 35	2776	61 29 34	2785	63 4 21	2793	64 38 58	2802
	α Arietis	E.	88 15 29	2792	86 40 51	2801	85 6 25	2809	83 32 9	2818
	Mars	E.	114 53 40	3017	113 23 48	3024	111 54 5	3033	110 24 33	3041
	Aldebaran	E.	119 45 59	2875	118 13 8	2880	116 40 24	2886	115 7 47	2892
22	Saturn	W.	97 14 3	2901	98 46 21	2909	100 18 28	2918	101 50 24	2926
	Antares	W.	72 29 16	2844	74 2 47	2852	75 36 8	2860	77 9 18	2868
	α Arietis	E.	75 43 38	2861	74 10 29	2869	72 37 31	2877	71 4 43	2886
	Mars	E.	102 59 19	3081	101 30 46	3089	100 2 23	3097	98 34 10	3105
	Aldebaran	E.	107 26 44	2925	105 54 57	2932	104 23 19	2939	102 51 49	2946

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
14	Sun	W.	78 30 26	2596	80 9 26	2606	81 48 13	2616	83 26 46	2626
	α Aquilæ	E.	83 12 58	2992	81 42 35	3008	80 12 32	3025	78 42 50	3043
	Fomalhaut	E.	107 48 15	2645	106 10 21	2649	104 32 32	2652	102 54 48	2657
15	Sun	W.	91 36 1	2678	93 13 10	2689	94 50 4	2699	96 26 45	2710
	Spica	W.	32 52 18	2381	34 36 20	2390	36 20 9	2399	38 3 45	2408
	α Aquilæ	E.	71 20 32	3157	69 53 31	3184	68 27 3	3214	67 1 10	3246
	Fomalhaut	E.	94 48 1	2691	93 11 9	2700	91 34 29	2709	89 58 1	2719
16	Sun	W.	104 26 35	2763	106 1 51	2774	107 36 53	2785	109 11 41	2795
	Spica	W.	46 38 29	2455	48 20 46	2465	50 2 49	2474	51 44 39	2483
	α Aquilæ	E.	60 1 50	3437	58 40 15	3484	57 19 33	3534	55 59 46	3588
	Fomalhaut	E.	81 59 14	2776	80 24 15	2790	78 49 34	2804	77 15 11	2818
	α Pegasi	E.	103 57 22	2651	102 19 36	2657	100 41 59	2665	99 4 32	2673
17	Sun	W.	117 2 16	2847	118 35 43	2858	120 8 56	2867	121 41 57	2878
	Spica	W.	60 10 31	2530	61 51 2	2540	63 31 20	2549	65 11 25	2559
	Saturn	W.	39 53 24	2629	41 31 40	2632	43 9 51	2638	44 47 55	2642
	Fomalhaut	E.	69 28 9	2899	67 55 49	2918	66 23 53	2937	64 52 21	2958
	α Pegasi	E.	91 0 6	2717	89 23 49	2727	87 47 45	2737	86 11 54	2747
18	Sun	W.	129 23 44	2928	130 55 27	2938	132 26 58	2948	133 58 16	2958
	Spica	W.	73 28 39	2604	75 7 28	2613	76 46 5	2623	78 24 29	2632
	Saturn	W.	52 56 21	2674	54 33 36	2681	56 10 42	2688	57 47 38	2695
	Fomalhaut	E.	57 21 32	3076	55 52 53	3105	54 24 49	3134	52 57 21	3167
	α Pegasi	E.	78 16 7	2802	76 41 42	2814	75 7 32	2826	73 33 38	2839
19	Spica	W.	86 33 28	2676	88 10 40	2685	89 47 40	2694	91 24 28	2702
	Saturn	W.	65 49 47	2734	67 25 42	2741	69 1 27	2750	70 37 1	2758
	Antares	W.	40 40 5	2673	42 17 21	2681	43 54 26	2690	45 31 19	2699
	Fomalhaut	E.	45 50 30	3365	44 27 33	3415	43 5 34	3470	41 44 36	3530
	α Pegasi	E.	65 48 23	2908	64 16 14	2924	62 44 25	2939	61 12 56	2956
	α Arietis	E.	107 25 39	2690	105 48 46	2698	104 12 4	2707	102 35 33	2716
20	Spica	W.	99 25 35	2746	101 1 14	2755	102 36 41	2763	104 11 57	2772
	Saturn	W.	78 32 10	2799	80 6 39	2807	81 40 58	2815	83 15 6	2824
	Antares	W.	53 32 49	2742	55 8 33	2751	56 44 5	2760	58 19 26	2769
	α Pegasi	E.	53 41 4	3052	52 11 55	3074	50 43 14	3097	49 15 1	3123
	α Arietis	E.	94 35 51	2759	93 0 29	2767	91 25 18	2775	89 50 18	2784
21	Spica	W.	112 5 28	2815	113 39 37	2823	115 13 35	2831	116 47 22	2840
	Saturn	W.	91 3 1	2866	92 36 3	2875	94 8 54	2883	95 41 34	2892
	Antares	W.	66 13 23	2811	67 47 37	2818	69 21 41	2827	70 55 34	2835
	α Arietis	E.	81 58 5	2826	80 24 11	2835	78 50 29	2844	77 16 58	2852
	Mars	E.	108 55 10	3049	107 25 58	3056	105 56 55	3065	104 28 2	3073
	Aldebaran	E.	113 35 18	2898	112 2 57	2905	110 30 44	2912	108 58 40	2918
22	Saturn	W.	103 22 10	2935	104 53 45	2944	106 25 8	2952	107 56 21	2962
	Antares	W.	78 42 18	2876	80 15 8	2884	81 47 47	2892	83 20 16	2900
	α Arietis	E.	69 32 6	2894	67 59 40	2903	66 27 25	2912	64 55 21	2920
	Mars	E.	97 6 6	3114	95 38 13	3121	94 10 29	3129	92 42 55	3137
	Aldebaran	E.	101 20 29	2954	99 49 18	2961	98 18 16	2968	96 47 23	2975

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Antares	W.	84 52 35	2908	86 24 44	2916	87 56 43	2923	89 28 33	2931
	α Arietis	E.	63 23 28	2928	61 51 45	2936	60 20 12	2945	58 48 50	2953
	Mars	E.	91 15 30	3145	89 48 15	3153	88 21 9	3161	86 54 13	3168
	Aldebaran	E.	95 16 39	2983	93 46 5	2990	92 15 40	2997	90 45 24	3005
24	Antares	W.	97 5 21	2966	98 36 16	2973	100 7 2	2981	101 37 39	2987
	α Aquilæ	W.	50 45 17	4244	51 53 2	4197	53 1 31	4156	54 10 39	4117
	α Arietis	E.	51 14 34	2993	49 44 13	3002	48 14 3	3010	46 44 3	3018
	Mars	E.	79 41 50	3206	78 15 48	3214	76 49 55	3220	75 24 10	3228
	Aldebaran	E.	83 16 25	3043	81 47 5	3050	80 17 54	3057	78 48 52	3065
25	α Aquilæ	W.	60 4 28	3973	61 16 34	3952	62 29 1	3932	63 41 48	3914
	α Arietis	E.	39 16 34	3060	37 47 35	3068	36 18 46	3076	34 50 7	3086
	Mars	E.	68 17 29	3261	66 52 32	3267	65 27 42	3273	64 2 59	3279
	Aldebaran	E.	71 26 0	3101	69 57 52	3109	68 29 53	3115	67 2 2	3123
	Pollux	E.	113 53 59	3029	112 24 22	3034	110 54 51	3039	109 25 26	3044
26	α Aquilæ	W.	69 49 49	3845	71 4 5	3835	72 18 31	3825	73 33 7	3816
	Fomalhaut	W.	43 47 46	3770	45 3 19	3737	46 19 27	3707	47 36 7	3680
	Mars	E.	57 1 5	3306	55 37 1	3311	54 13 2	3315	52 49 8	3320
	Aldebaran	E.	59 44 55	3158	58 17 55	3164	56 51 3	3171	55 24 19	3178
	Pollux	E.	101 59 50	3065	100 30 58	3069	99 2 10	3072	97 33 26	3074
27	α Aquilæ	W.	79 48 8	3784	81 3 27	3780	82 18 50	3775	83 34 18	3771
	Fomalhaut	W.	54 5 49	3576	55 24 49	3560	56 44 7	3545	58 3 42	3530
	Mars	E.	45 50 55	3340	44 27 30	3344	43 4 9	3347	41 40 52	3351
	Aldebaran	E.	48 12 50	3215	46 46 59	3223	45 21 17	3231	43 55 45	3240
	Pollux	E.	90 10 33	3085	88 42 5	3087	87 13 39	3087	85 45 14	3087
	Sun	E.	133 24 23	3445	132 2 57	3446	130 41 33	3447	129 20 10	3447
28	α Aquilæ	W.	89 52 26	3760	91 8 10	3758	92 23 56	3758	93 39 42	3757
	Fomalhaut	W.	64 45 19	3469	66 6 18	3457	67 27 30	3447	68 48 53	3437
	α Pegasi	W.	42 22 0	3508	43 42 15	3485	45 2 56	3462	46 24 3	3440
	Pollux	E.	78 23 6	3084	76 54 37	3082	75 26 6	3081	73 57 33	3078
	Sun	E.	122 33 11	3444	121 11 44	3441	119 50 14	3439	118 28 42	3436
29	α Aquilæ	W.	99 58 34	3761	101 14 17	3763	102 29 58	3766	103 45 36	3768
	Fomalhaut	W.	75 38 38	3388	77 1 8	3379	78 23 48	3369	79 46 40	3360
	α Pegasi	W.	53 15 18	3348	54 38 34	3332	56 2 9	3316	57 26 2	3300
	Pollux	E.	66 33 46	3059	65 4 46	3053	63 35 39	3048	62 6 26	3042
	Sun	E.	111 40 0	3415	110 18 0	3408	108 55 53	3402	107 33 39	3396
30	Fomalhaut	W.	86 43 38	3313	88 7 34	3304	89 31 41	3294	90 55 59	3284
	α Pegasi	W.	64 29 52	3226	65 55 30	3212	67 21 25	3198	68 47 37	3183
	Pollux	E.	54 38 19	3006	53 8 14	2998	51 37 59	2989	50 7 33	2980
	Sun	E.	100 40 23	3354	99 17 14	3345	97 53 54	3335	96 30 23	3324
31	Fomalhaut	W.	98 0 19	3237	99 25 44	3227	100 51 21	3218	102 17 9	3209
	α Pegasi	W.	76 2 56	3110	77 30 53	3096	78 59 8	3081	80 27 41	3066
	α Arietis	W.	32 52 38	2961	34 23 40	2945	35 55 2	2928	37 26 45	2912
	Pollux	E.	42 32 21	2930	41 0 40	2918	39 28 44	2907	37 56 34	2895
	Sun	E.	89 29 30	3264	88 4 36	3251	86 39 27	3236	85 14 1	3222

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Antares	W.	91 0 13	2938	92 31 44	2946	94 3 5	2953	95 34 17	2959
	α Arietis	E.	57 17 38	2961	55 46 36	2969	54 15 45	2977	52 45 4	2986
	MARS	E.	85 27 26	3176	84 0 48	3184	82 34 20	3192	81 8 1	3198
	Aldebaran	E.	89 15 18	3013	87 45 21	3020	86 15 33	3027	84 45 54	3035
24	Antares	W.	103 8 8	2993	104 38 29	3000	106 8 42	3005	107 38 48	3012
	α Aquilæ	W.	55 20 24	4083	56 30 42	4052	57 41 30	4024	58 52 46	3998
	α Arietis	E.	45 14 13	3026	43 44 33	3034	42 15 3	3043	40 45 43	3052
	MARS	E.	73 58 34	3235	72 33 6	3242	71 7 46	3248	69 42 34	3254
	Aldebaran	E.	77 20 0	3072	75 51 16	3080	74 22 42	3087	72 54 17	3094
25	α Aquilæ	W.	64 54 54	3898	66 8 16	3882	67 21 54	3869	68 35 45	3856
	α Arietis	E.	33 21 40	3095	31 53 24	3105	30 25 20	3114	28 57 27	3124
	MARS	E.	62 38 23	3285	61 13 54	3290	59 49 31	3296	58 25 15	3301
	Aldebaran	E.	65 34 20	3129	64 6 46	3137	62 39 21	3143	61 12 4	3150
	Pollux	E.	107 56 8	3049	106 26 56	3053	104 57 49	3057	103 28 47	3061
26	α Aquilæ	W.	74 47 53	3808	76 2 47	3802	77 17 47	3795	78 32 54	3789
	Fomalhaut	W.	48 53 15	3655	50 10 50	3634	51 28 48	3613	52 47 8	3594
	MARS	E.	51 25 20	3325	50 1 37	3328	48 37 58	3332	47 14 24	3337
	Aldebaran	E.	53 57 44	3186	52 31 18	3193	51 5 0	3200	49 38 51	3207
	Pollux	E.	96 4 45	3078	94 36 8	3080	93 7 34	3082	91 39 2	3084
27	α Aquilæ	W.	84 49 50	3768	86 5 25	3766	87 21 3	3764	88 36 43	3761
	Fomalhaut	W.	59 23 33	3516	60 43 39	3504	62 3 59	3492	63 24 32	3480
	MARS	E.	40 17 39	3353	38 54 29	3357	37 31 23	3360	36 8 21	3365
	Aldebaran	E.	42 30 23	3250	41 5 13	3259	39 40 14	3270	38 15 28	3282
	Pollux	E.	84 16 49	3087	82 48 24	3087	81 19 59	3087	79 51 33	3086
	SUN	E.	127 58 47	3447	126 37 24	3447	125 16 1	3446	123 54 37	3445
28	α Aquilæ	W.	94 55 29	3757	96 11 16	3757	97 27 3	3758	98 42 49	3759
	Fomalhaut	W.	70 10 28	3427	71 32 14	3417	72 54 11	3408	74 16 19	3398
	α Pegasi	W.	47 45 34	3420	49 7 28	3400	50 29 44	3382	51 52 21	3365
	Pollux	E.	72 28 56	3074	71 0 15	3071	69 31 30	3068	68 2 41	3063
	SUN	E.	117 7 6	3433	115 45 27	3429	114 23 43	3424	113 1 54	3420
29	α Aquilæ	W.	105 1 11	3772	106 16 42	3776	107 32 9	3782	108 47 30	3788
	Fomalhaut	W.	81 9 42	3351	82 32 55	3342	83 56 18	3332	85 19 53	3323
	α Pegasi	W.	58 50 13	3285	60 14 42	3270	61 39 28	3256	63 4 31	3241
	Pollux	E.	60 37 5	3036	59 7 37	3029	57 38 0	3022	56 8 14	3014
	SUN	E.	106 11 18	3388	104 48 48	3380	103 26 9	3372	102 3 21	3364
30	Fomalhaut	W.	92 20 29	3275	93 45 9	3265	95 10 1	3256	96 35 4	3246
	α Pegasi	W.	70 14 6	3169	71 40 52	3154	73 7 56	3140	74 35 17	3125
	Pollux	E.	48 36 55	2971	47 6 6	2961	45 35 4	2950	44 3 49	2940
	SUN	E.	95 6 39	3313	93 42 43	3301	92 18 33	3289	90 54 9	3276
31	Fomalhaut	W.	103 43 8	3199	105 9 18	3191	106 35 38	3182	108 2 9	3173
	α Pegasi	W.	81 56 32	3051	83 25 42	3035	84 55 11	3021	86 24 58	3005
	α Arietis	W.	38 58 48	2896	40 31 12	2879	42 3 58	2862	43 37 5	2845
	Pollux	E.	36 24 9	2884	34 51 30	2873	33 18 36	2861	31 45 27	2848
	SUN	E.	83 48 18	3208	82 22 18	3193	80 56 0	3178	79 29 24	3161

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	10 44 16.22	9.063	N. 8 0 47.4	−54.71	15 53.81	64.39	0 18.90	0.791
Wed.	2	10 47 53.59	9.052	7 38 50.4	55.03	15 54.04	64.35	0 38.03	0.802
Thur.	3	10 51 30.71	9.042	7 16 46.0	55.34	15 54.27	64.31	0 57.41	0.812
Frid.	4	10 55 7.60	9.032	6 54 34.3	−55.63	15 54.50	64.28	1 17.02	0.822
Sat.	5	10 58 44.26	9.023	6 32 15.7	55.91	15 54.74	64.24	1 36.86	0.831
SUN.	6	11 2 20.71	9.015	6 9 50.7	56.17	15 54.98	64.21	1 56.91	0.839
Mon.	7	11 5 56.98	9.007	5 47 19.5	−56.42	15 55.23	64.18	2 17.14	0.847
Tues.	8	11 9 33.06	9.000	5 24 42.5	56.65	15 55.47	64.16	2 37.55	0.854
Wed.	9	11 13 8.99	8.994	5 2 0.0	56.87	15 55.72	64.14	2 58.12	0.860
Thur.	10	11 16 44.77	8.988	4 39 12.5	−57.08	15 55.98	64.12	3 18.84	0.866
Frid.	11	11 20 20.42	8.983	4 16 20.3	57.27	15 56.24	64.10	3 39.69	0.871
Sat.	12	11 23 55.96	8.979	3 53 23.6	57.44	15 56.50	64.09	4 0.64	0.875
SUN.	13	11 27 31.40	8.975	3 30 23.0	−57.60	15 56.76	64.08	4 21.70	0.879
Mon.	14	11 31 6.77	8.972	3 7 18.6	57.75	15 57.02	64.07	4 42.83	0.882
Tues.	15	11 34 42.08	8.970	2 44 10.9	57.89	15 57.29	64.07	5 4.01	0.884
Wed.	16	11 38 17.35	8.969	2 21 0.1	−58.01	15 57.56	64.07	5 25.24	0.885
Thur.	17	11 41 52.60	8.969	1 57 46.6	58.11	15 57.83	64.07	5 46.48	0.885
Frid.	18	11 45 27.85	8.970	1 34 30.8	58.20	15 58.10	64.07	6 7.72	0.884
Sat.	19	11 49 3.14	8.971	1 11 12.8	−58.28	15 58.37	64.08	6 28.94	0.883
SUN.	20	11 52 38.47	8.974	0 47 53.1	58.35	15 58.64	64.09	6 50.10	0.880
Mon.	21	11 56 13.87	8.977	0 24 32.0	58.41	15 58.91	64.10	7 11.19	0.877
Tues.	22	11 59 49.38	8.982	N. 0 1 9.7	−58.45	15 59.18	64.12	7 32.18	0.872
Wed.	23	12 3 25.00	8.987	S. 0 22 13.5	58.48	15 59.45	64.14	7 53.06	0.867
Thur.	24	12 7 0.77	8.994	0 45 37.2	58.49	15 59.72	64.16	8 13.78	0.860
Frid.	25	12 10 36.70	9.001	1 9 1.0	−58.49	15 59.99	64.19	8 34.35	0.853
Sat.	26	12 14 12.83	9.010	1 32 24.8	58.48	16 0.25	64.22	8 54.71	0.844
SUN.	27	12 17 49.18	9.019	1 55 48.1	58.45	16 0.52	64.25	9 14.87	0.835
Mon.	28	12 21 25.77	9.030	2 19 10.6	−58.41	16 0.79	64.28	9 34.78	0.824
Tues.	29	12 25 2.61	9.041	2 42 32.0	58.36	16 1.06	64.32	9 54.44	0.813
Wed.	30	12 28 39.74	9.053	3 5 51.9	58.29	16 1.33	64.36	10 13.81	0.801
Thur.	31	12 32 17.16	9.066	S. 3 29 9.9	−58.21	16 1.60	64.40	10 32.88	0.788

Note.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	10 44 16.27	9.065	N. 8 0 47.0	−54.72	0 18.90	0.792	10 44 35.17
Wed.	2	10 47 53.69	9.054	7 38 49.8	55.04	0 38.04	0.803	10 48 31.72
Thur.	3	10 51 30.86	9.044	7 16 45.0	55.35	0 57.42	0.813	10 52 28.28
Frid.	4	10 55 7.79	9.034	6 54 33.0	−55.64	1 17.04	0.822	10 56 24.83
Sat.	5	10 58 44.50	9.025	6 32 14.2	55.92	1 36.88	0.831	11 0 21.39
SUN.	6	11 2 21.00	9.017	6 9 48.8	56.19	1 56.94	0.839	11 4 17.94
Mon.	7	11 5 57.32	9.009	5 47 17.3	−56.44	2 17.17	0.847	11 8 14.49
Tues.	8	11 9 33.46	9.002	5 24 40.0	56.67	2 37.59	0.854	11 12 11.05
Wed.	9	11 13 9.44	8.996	5 1 57.2	56.89	2 58.16	0.860	11 16 7.60
Thur.	10	11 16 45.27	8.990	4 39 9.3	−57.09	3 18.89	0.866	11 20 4.16
Frid.	11	11 20 20.97	8.985	4 16 16.7	57.28	3 39.74	0.871	11 24 0.71
Sat.	12	11 23 56.56	8.981	3 53 19.7	57.46	4 0.70	0.875	11 27 57.26
SUN.	13	11 27 32.05	8.977	3 30 18.7	−57.62	4 21.76	0.879	11 31 53.82
Mon.	14	11 31 7.47	8.975	3 7 14.0	57.77	4 42.90	0.882	11 35 50.37
Tues.	15	11 34 42.83	8.973	2 44 5.9	57.90	5 4.09	0.884	11 39 46.92
Wed.	16	11 38 18.16	8.971	2 20 54.8	−58.02	5 25.32	0.885	11 43 43.48
Thur.	17	11 41 53.46	8.971	1 57 41.0	58.13	5 46.57	0.885	11 47 40.03
Frid.	18	11 45 28.77	8.972	1 34 24.8	58.22	6 7.81	0.885	11 51 36.58
Sat.	19	11 49 4.11	8.973	1 11 6.5	−58.30	6 29.03	0.883	11 55 33.14
SUN.	20	11 52 39.49	8.976	0 47 46.4	58.37	6 50.20	0.880	11 59 29.69
Mon.	21	11 56 14.95	8.979	0 24 24.9	58.42	7 11.30	0.877	12 3 26.24
Tues.	22	11 59 50.51	8.984	N. 0 1 2.3	−58.46	7 32.29	0.872	12 7 22.80
Wed.	23	12 3 26.18	8.990	S. 0 22 21.2	58.49	7 53.17	0.867	12 11 19.35
Thur.	24	12 7 2.00	8.997	0 45 45.2	58.50	8 13.90	0.860	12 15 15.90
Frid.	25	12 10 37.99	9.004	1 9 9.4	−58.51	8 34.47	0.853	12 19 12.46
Sat.	26	12 14 14.17	9.012	1 32 33.5	58.49	8 54.84	0.844	12 23 9.01
SUN.	27	12 17 50.57	9.022	1 55 57.1	58.47	9 14.99	0.835	12 27 5.57
Mon.	28	12 21 27.21	9.032	2 19 19.9	−58.43	9 34.91	0.825	12 31 2.12
Tues.	29	12 25 4.10	9.043	2 42 41.6	58.37	9 54.57	0.813	12 34 58.67
Wed.	30	12 28 41.28	9.055	3 6 1.8	58.30	10 13.95	0.801	12 38 55.23
Thur.	31	12 32 18.76	9.068	S. 3 29 20.2	−58.22	10 33.02	0.788	12 42 51.78

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

Diff for 1 Hour,
$+9^{\mathrm{s}}8565$
(Table III.)

AT GREENWICH MEAN NOON.									
		THE SUN'S							
		TRUE LONGITUDE.							
Day of the Month.	Day of the Year.	λ	λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	245	159 30 17.6	29 33.1	145.34	+ 0.57	0.0037126	−42.9	13 13 14.52
2	246	160 28 26.6	27 42.0	145.42	0.48	0.0036090	43.4	13 9 18.61
3	247	161 26 37.7	25 53.0	145.50	0.37	0.0035041	44.0	13 5 22.70
4	248	162 24 50.7	24 5.9	145.58	+ 0.25	0.0033977	−44.6	13 1 26.80
5	249	163 23 5.6	22 20.6	145.66	+ 0.12	0.0032897	45.3	12 57 30.89
6	250	164 21 22.4	20 37.3	145.74	— 0.01	0.0031802	46.0	12 53 34.98
7	251	165 19 41.1	18 55.9	145.82	— 0.13	0.0030691	−46.6	12 49 39.07
8	252	166 18 1.6	17 16.3	145.89	0.24	0.0029564	47.2	12 45 43.16
9	253	167 16 23.8	15 38.4	145.96	0.33	0.0028423	47.9	12 41 47.26
10	254	168 14 47.8	14 2.2	146.03	— 0.41	0.0027266	−48.5	12 37 51.35
11	255	169 13 13.5	12 27.6	146.10	0.46	0.0026097	49.0	12 33 55.44
12	256	170 11 40.8	10 55.0	146.17	0.47	0.0024915	49.5	12 29 59.53
13	257	171 10 9.7	9 23.8	146.24	— 0.45	0.0023722	−49.9	12 26 3.62
14	258	172 8 40.2	7 54.2	146.31	0.40	0.0022521	50.2	12 22 7.72
15	259	173 7 12.3	6 26.2	146.37	0.33	0.0021312	50.5	12 18 11.81
16	260	174 5 46.0	4 59.8	146.44	— 0.24	0.0020097	−50.7	12 14 15.90
17	261	175 4 21.4	3 35.1	146.51	— 0.12	0.0018877	50.9	12 10 19.99
18	262	176 2 58.6	2 12.2	146.58	+ 0.01	0.0017654	51.0	12 6 24.09
19	263	177 1 37.4	0 50.9	146.66	+ 0.15	0.0016431	−51.0	12 2 28.18
20	264	177 60 18.1	59 31.4	146.73	0.28	0.0015206	51.0	11 58 32.27
21	265	178 59 0.5	58 13.7	146.81	0.40	0.0013982	51.0	11 54 36.36
22	266	179 57 44.9	56 58.0	146.89	+ 0.51	0.0012760	−50.9	11 50 40.46
23	267	180 56 31.4	55 44.4	146.98	0.59	0.0011539	50.8	11 46 44.55
24	268	181 55 19.9	54 32.8	147.07	0.65	0.0010321	50.8	11 42 48.64
25	269	182 54 10.7	53 23.5	147.16	+ 0.68	0.0009103	−50.7	11 38 52.73
26	270	183 53 3.4	52 16.1	147.25	0.68	0.0007886	50.7	11 34 56.83
27	271	184 51 58.5	51 11.1	147.34	0.65	0.0006671	50.6	11 31 0.92
28	272	185 50 55.8	50 8.3	147.44	+ 0.60	0.0005455	−50.7	11 27 5.01
29	273	186 49 55.4	49 7.8	147.53	0.51	0.0004238	50.7	11 23 9.10
30	274	187 48 57.5	48 9.7	147.63	0.40	0.0003020	50.8	11 19 13.20
31	275	188 48 1.8	47 13.9	147.73	+ 0.28	0.0001798	−51.0	11 15 17.29

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^{d}.0$.

Diff. for 1 Hour, —$9^{s}.8296$. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 15.9	15 22.4	55 54.8	+1.88	56 18.4	+2.04	19 20.2	2.34	23.3
2	15 29.3	15 36.5	56 43.7	2.17	57 10.4	2.26	20 16.7	2.35	24.3
3	15 44.0	15 51.6	57 37.9	2.31	58 5.9	2.33	21 12.6	2.30	25.3
4	15 59.2	16 6.6	58 33.8	+2.29	59 0.8	+2.20	22 7.0	2.23	26.3
5	16 13.6	16 20.0	59 26.5	2.05	59 50.1	1.85	22 59.6	2.16	27.3
6	16 25.7	16 30.5	60 11.0	1.60	60 28.6	1.30	23 50.9	2.12	28.3
7	16 34.2	16 36.8	60 42.3	+0.96	60 51.9	+0.62	☌		29.3
8	16 38.2	16 38.4	60 57.1	+0.25	60 57.8	−0.13	0 41.9	2.13	0.9
9	16 37.4	16 35.3	60 54.1	−0.48	60 46.2	0.81	1 33.7	2.19	1.9
10	16 32.1	16 28.1	60 34.6	−1.10	60 19.7	−1.36	2 27.4	2.29	2.9
11	16 23.2	16 17.8	60 2.0	1.57	59 42.1	1.72	3 23.7	2.40	3.9
12	16 12.0	16 5.9	59 20.7	1.83	58 58.2	1.90	4 22.5	2.49	4.9
13	15 59.6	15 53.3	58 35.1	−1.93	58 11.9	−1.92	5 22.6	2.51	5.9
14	15 47.0	15 40.9	57 49.0	1.89	57 26.6	1.83	6 22.3	2.45	6.9
15	15 35.0	15 29.4	57 5.0	1.75	56 44.5	1.67	7 19.4	2.31	7.9
16	15 24.1	15 19.2	56 25.1	−1.57	56 6.8	−1.47	8 12.7	2.13	8.9
17	15 14.5	15 10.3	55 49.7	1.37	55 34.0	1.26	9 1.8	1.96	9.9
18	15 6.3	15 2.7	55 19.4	1.16	55 6.1	1.06	9 47.1	1.82	10.9
19	14 59.4	14 56.4	54 54.0	−0.96	54 43.0	−0.87	10 29.5	1.72	11.9
20	14 53.7	14 51.3	54 33.2	0.77	54 24.5	0.68	11 9.9	1.66	12.9
21	14 49.3	14 47.6	54 17.0	0.58	54 10.7	0.48	11 49.5	1.64	13.9
22	14 46.1	14 45.1	54 5.5	−0.38	54 1.6	−0.26	12 29.1	1.67	14.9
23	14 44.4	14 44.1	53 59.1	−0.15	53 58.0	−0.03	13 9.8	1.73	15.9
24	14 44.2	14 44.8	53 58.4	+0.10	54 0.4	+0.24	13 52.4	1.82	16.9
25	14 45.8	14 47.3	54 4.1	+0.39	54 9.7	+0.55	14 37.6	1.94	17.9
26	14 49.4	14 52.0	54 17.2	0.71	54 26.8	0.89	15 25.8	2.07	18.9
27	14 55.2	14 58.9	54 38.5	1.07	54 52.4	1.25	16 16.9	2.18	19.9
28	15 3.3	15 8.3	55 8.5	+1.43	55 26.8	+1.62	17 10.3	2.26	20.9
29	15 13.9	15 20.0	55 47.3	1.80	56 9.9	1.96	18 4.9	2.28	21.9
30	15 26.7	15 33.8	56 34.3	2.11	57 0.4	2.23	18 59.4	2.25	22.9
	15 41.3	15 49.1	57 27.9	+2.33	57 56.5	+2.41	19 52.8	2.20	23.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 1.					**THURSDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 21 37.55	2.3712	N 27 52 6.8	0.782	0	7 17 32.51	2.4219	N.25 27 53.0	6.855
1	5 23 59.92	2.3744	27 52 49.2	0.631	1	7 19 57.79	2.4206	25 20 56.9	7.013
2	5 26 22.48	2.3776	27 53 22.5	0.479	2	7 22 22.99	2.4193	25 13 51.4	7.171
3	5 28 45.24	2.3808	27 53 46.7	0.327	3	7 24 48.11	2.4180	25 6 36.4	7.329
4	5 31 8.18	2.3838	27 54 1.7	0.173	4	7 27 13.15	2.4166	24 59 11.9	7.486
5	5 33 31.30	2.3867	27 54 7.4	+ 0.018	5	7 29 38.10	2.4150	24 51 38.1	7.642
6	5 35 54.59	2.3896	27 54 3.9	− 0.136	6	7 32 2.95	2.4134	24 43 54.9	7.797
7	5 38 18.05	2.3923	27 53 51.1	0.291	7	7 34 27.71	2.4118	24 36 2.4	7.953
8	5 40 41.67	2.3949	27 53 29.0	0.446	8	7 36 52.37	2.4101	24 28 0.5	8.109
9	5 43 5.44	2.3974	27 52 57.6	0.602	9	7 39 16.92	2.4083	24 19 49.3	8.264
10	5 45 29.36	2.3999	27 52 16.8	0.759	10	7 41 41.36	2.4064	24 11 28.8	8.417
11	5 47 53.43	2.4023	27 51 26.6	0.916	11	7 44 5.69	2.4045	24 2 59.2	8.570
12	5 50 17.64	2.4046	27 50 26.9	1.073	12	7 46 29.90	2.4025	23 54 20.4	8.722
13	5 52 41.98	2.4068	27 49 17.8	1.231	13	7 48 53.99	2.4005	23 45 32.5	8.874
14	5 55 6.45	2.4089	27 47 59.2	1.388	14	7 51 17.96	2.3984	23 36 35.5	9.026
15	5 57 31.05	2.4109	27 46 31.2	1.547	15	7 53 41.80	2.3963	23 27 29.4	9.177
16	5 59 55.76	2.4127	27 44 53.6	1.707	16	7 56 5.51	2.3941	23 18 14.3	9.326
17	6 2 20.58	2.4145	27 43 6.4	1.866	17	7 58 29.09	2.3918	23 8 50.3	9.475
18	6 4 45.50	2.4162	27 41 9.7	2.025	18	8 0 52.53	2.3895	22 59 17.3	9.624
19	6 7 10.52	2.4178	27 39 3.4	2.185	19	8 3 15.83	2.3872	22 49 35.4	9.771
20	6 9 35.64	2.4193	27 36 47.5	2.346	20	8 5 38.99	2.3848	22 39 44.8	9.917
21	6 12 0.84	2.4207	27 34 21.9	2.507	21	8 8 2.01	2.3824	22 29 45.4	10.063
22	6 14 26.12	2.4219	27 31 46.7	2.667	22	8 10 24.88	2.3799	22 19 37.3	10.208
23	6 16 51.47	2.4231	N.27 29 1.9	2.827	23	8 12 47.60	2.3774	N.22 9 20.5	10.352
	WEDNESDAY 2.					**FRIDAY 4.**			
0	6 19 16.90	2.4243	N.27 26 7.5	2.988	0	8 15 10.17	2.3749	N.21 58 55.1	10.494
1	6 21 42.39	2.4253	27 23 3.4	3.149	1	8 17 32.59	2.3723	21 48 21.2	10.636
2	6 24 7.93	2.4262	27 19 49.6	3.312	2	8 19 54.85	2.3697	21 37 38.8	10.777
3	6 26 33.53	2.4270	27 16 26.0	3.474	3	8 22 16.95	2.3670	21 26 47.9	10.918
4	6 28 59.17	2.4277	27 12 52.7	3.635	4	8 24 38.89	2.3643	21 15 48.6	11.057
5	6 31 24.85	2.4283	27 9 9.8	3.796	5	8 27 0.67	2.3616	21 4 41.0	11.195
6	6 33 50.56	2.4288	27 5 17.2	3.958	6	8 29 22.28	2.3588	20 53 25.2	11.332
7	6 36 16.30	2.4292	27 1 14.9	4.120	7	8 31 43.73	2.3561	20 42 1.2	11.468
8	6 38 42.06	2.4294	26 57 2.8	4.282	8	8 34 5.01	2.3533	20 30 29.0	11.603
9	6 41 7.83	2.4296	26 52 41.0	4.444	9	8 36 26.13	2.3506	20 18 48.8	11.737
10	6 43 33.61	2.4297	26 48 9.5	4.606	10	8 38 47.08	2.3478	20 7 0.6	11.870
11	6 45 59.40	2.4298	26 43 28.3	4.767	11	8 41 7.86	2.3449	19 55 4.4	12.002
12	6 48 25.19	2.4297	26 38 37.4	4.929	12	8 43 28.47	2.3421	19 43 0.4	12.132
13	6 50 50.97	2.4295	26 33 36.8	5.091	13	8 45 48.91	2.3392	19 30 48.6	12.261
14	6 53 16.73	2.4293	26 28 26.5	5.252	14	8 48 9.18	2.3364	19 18 29.1	12.389
15	6 55 42.48	2.4290	26 23 6.5	5.413	15	8 50 29.28	2.3336	19 6 1.9	12.517
16	6 58 8.21	2.4285	26 17 36.9	5.574	16	8 52 49.21	2.3307	18 53 27.1	12.642
17	7 0 33.90	2.4279	26 11 57.6	5.736	17	8 55 8.96	2.3278	18 40 44.9	12.766
18	7 2 59.56	2.4273	26 6 8.6	5.897	18	8 57 28.54	2.3249	18 27 55.2	12.890
19	7 5 25.18	2.4266	26 0 10.0	6.057	19	8 59 47.95	2.3221	18 14 58.1	13.012
20	7 7 50.75	2.4258	25 54 1.8	6.217	20	9 2 7.19	2.3192	18 1 53.8	13.132
21	7 10 16.28	2.4250	25 47 43.9	6.377	21	9 4 26.26	2.3164	17 48 42.3	13.251
22	7 12 41.75	2.4240	25 41 16.5	6.537	22	9 6 45.16	2.3136	17 35 23.7	13.369
23	7 15 7.16	2.4230	25 34 39.5	6.696	23	9 9 3.89	2.3107	17 21 58.0	13.486
24	7 17 32.51	2.4219	N.25 27 53.0	6.855	24	9 11 22.45	2.3079	N.17 8 25.4	13.601

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 5.					MONDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 11 22.45	2.3079	N.17 8 25.4	13.601	0	10 59 29.66	2.2156	N. 4 31 50.7	17.279
1	9 13 40.84	2.3051	16 54 45.9	13.715	1	11 1 42.58	2.2151	4 14 32.9	17.312
2	9 15 59.06	2.3023	16 40 59.6	13.827	2	11 3 55.47	2.2146	3 57 13.2	17.343
3	9 18 17.12	2.2996	16 27 6.6	13.938	3	11 6 8.33	2.2142	3 39 51.7	17.373
4	9 20 35.01	2.2967	16 13 7.0	14.048	4	11 8 21.17	2.2139	3 22 28.5	17.401
5	9 22 52.73	2.2939	15 59 0.8	14.157	5	11 10 34.00	2.2137	3 5 3.6	17.428
6	9 25 10.28	2.2912	15 44 48.2	14.263	6	11 12 46.81	2.2135	2 47 37.2	17.452
7	9 27 27.67	2.2885	15 30 29.2	14.369	7	11 14 59.62	2.2134	2 30 9.4	17.473
8	9 29 44.90	2.2859	15 16 3.9	14.472	8	11 17 12.42	2.2133	2 12 40.4	17.493
9	9 32 1.98	2.2833	15 1 32.5	14.574	9	11 19 25.22	2.2133	1 55 10.2	17.512
10	9 34 18.90	2.2807	14 46 55.0	14.675	10	11 21 38.02	2.2135	1 37 39.0	17.528
11	9 36 35.66	2.2780	14 32 11.5	14.775	11	11 23 50.84	2.2137	1 20 6.9	17.542
12	9 38 52.26	2.2754	14 17 22.0	14.873	12	11 26 3.67	2.2140	1 2 34.0	17.554
13	9 41 8.71	2.2729	14 2 26.7	14.969	13	11 28 16.52	2.2143	0 45 0.4	17.564
14	9 43 25.01	2.2705	13 47 25.7	15.064	14	11 30 29.39	2.2147	0 27 26.3	17.572
15	9 45 41.17	2.2681	13 32 19.0	15.157	15	11 32 42.29	2.2152	N. 0 9 51.7	17.579
16	9 47 57.18	2.2656	13 17 6.8	15.249	16	11 34 55.22	2.2158	S. 0 7 43.2	17.583
17	9 50 13.04	2.2632	13 1 49.1	15.339	17	11 37 8.19	2.2165	0 25 18.3	17.587
18	9 52 28.76	2.2608	12 46 26.1	15.427	18	12 39 21.20	2.2172	0 42 53.6	17.587
19	9 54 44.34	2.2586	12 30 57.8	15.514	19	11 41 34.25	2.2180	1 0 28.8	17.586
20	9 56 59.79	2.2564	12 15 24.4	15.599	20	11 43 47.36	2.2189	1 18 3.9	17.582
21	9 59 15.11	2.2542	11 59 45.9	15.683	21	11 46 0.52	2.2198	1 35 38.7	17.577
22	10 1 30.29	2.2520	11 44 2.4	15.765	22	11 48 13.74	2.2209	1 53 13.1	17.569
23	10 3 45.35	2.2499	N.11 28 14.1	15.845	23	11 50 27.03	2.2220	S. 2 10 47.0	17.560
	SUNDAY 6.					TUESDAY 8.			
0	10 6 0.28	2.2478	N.11 12 21.0	15.923	0	11 52 40.38	2.2231	S. 2 28 20.3	17.549
1	10 8 15.09	2.2458	10 56 23.3	16.000	1	11 54 53.80	2.2244	2 45 52.9	17.536
2	10 10 29.78	2.2438	10 40 21.0	16.076	2	11 57 7.30	2.2258	3 3 24.6	17.520
3	10 12 44.35	2.2419	10 24 14.2	16.149	3	11 59 20.89	2.2272	3 20 55.3	17.502
4	10 14 58.81	2.2401	10 8 3.1	16.220	4	12 1 34.56	2.2286	3 38 24.9	17.483
5	10 17 13.16	2.2383	9 51 47.8	16.290	5	12 3 48.32	2.2302	3 55 53.3	17.462
6	10 19 27.41	2.2366	9 35 28.3	16.358	6	12 6 2.18	2.2318	4 13 20.4	17.439
7	10 21 41.55	2.2349	9 19 4.8	16.425	7	12 8 16.14	2.2335	4 30 46.0	17.414
8	10 23 55.59	2.2332	9 2 37.3	16.490	8	12 10 30.20	2.2353	4 48 10.1	17.387
9	10 26 9.53	2.2316	8 46 6.0	16.552	9	12 12 44.37	2.2371	5 5 32.5	17.358
10	10 28 23.38	2.2301	8 29 31.0	16.613	10	12 14 58.65	2.2390	5 22 53.1	17.327
11	10 30 37.14	2.2287	8 12 52.4	16.673	11	12 17 13.05	2.2410	5 40 11.7	17.293
12	10 32 50.82	2.2273	7 56 10.2	16.732	12	12 19 27.57	2.2431	5 57 28.3	17.258
13	10 35 4.41	2.2259	7 39 24.6	16.787	13	12 21 42.22	2.2452	6 14 42.7	17.221
14	10 37 17.93	2.2246	7 22 35.8	16.840	14	12 23 57.00	2.2474	6 31 54.8	17.182
15	10 39 31.37	2.2234	7 5 43.8	16.892	15	12 26 11.91	2.2497	6 49 4.6	17.142
16	10 41 44.74	2.2223	6 48 48.7	16.942	16	12 28 26.96	2.2520	7 6 11.8	17.098
17	10 43 58.05	2.2212	6 31 50.7	16.991	17	12 30 42.15	2.2544	7 23 16.4	17.053
18	10 46 11.29	2.2202	6 14 49.8	17.037	18	12 32 57.49	2.2569	7 40 18.2	17.007
19	10 48 24.47	2.2193	5 57 46.2	17.082	19	12 35 12.98	2.2595	7 57 17.2	16.957
20	10 50 37.60	2.2184	5 40 39.9	17.126	20	12 37 28.63	2.2621	8 14 13.1	16.906
21	10 52 50.68	2.2176	5 23 31.1	17.167	21	12 39 44.43	2.2647	8 31 5.9	16.853
22	10 55 3.71	2.2168	5 6 19.9	17.206	22	12 42 0.39	2.2674	8 47 55.5	16.798
23	10 57 16.70	2.2162	4 49 6.4	17.243	23	12 44 16.52	2.2703	9 4 41.7	16.742
24	10 59 29.66	2.2156	N. 4 31 50.7	17.279	24	12 46 32.83	2.2732	S. 9 21 24.5	16.683

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 9.					**FRIDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 46 32.83	2.2732	S. 9 21 24.5	16.683	0	14 39 52.44	2.4589	S.20 58 51.3	11.704
1	12 48 49.31	2.2762	9 38 3.7	16.622	1	14 42 20.10	2.4631	21 10 29.2	11.559
2	12 51 5.97	2.2791	9 54 39.2	16.559	2	14 44 48.01	2.4672	21 21 58.4	11.413
3	12 53 22.80	2.2821	10 11 10.8	16.494	3	14 47 16.16	2.4712	21 33 18.8	11.267
4	12 55 39.82	2.2853	10 27 38.5	16.428	4	14 49 44.55	2.4752	21 44 30.4	11.118
5	12 57 57.03	2.2885	10 44 2.2	16.360	5	14 52 13.18	2.4791	21 55 33.0	10.968
6	13 0 14.44	2.2917	11 0 21.7	16.289	6	14 54 42.04	2.4830	22 6 26.6	10.818
7	13 2 32.04	2.2950	11 16 36.9	16.217	7	14 57 11.14	2.4869	22 17 11.1	10.666
8	13 4 49.84	2.2983	11 32 47.7	16.143	8	14 59 40.47	2.4907	22 27 46.5	10.513
9	13 7 7.84	2.3017	11 48 54.0	16.067	9	15 2 10.02	2.4944	22 38 12.6	10.358
10	13 9 26.05	2.3052	12 4 55.7	15.988	10	15 4 39.80	2.4982	22 48 29.4	10.202
11	13 11 44.47	2.3087	12 20 52.6	15.908	11	15 7 9.80	2.5019	22 58 36.8	10.045
12	13 14 3.10	2.3123	12 36 44.7	15.827	12	15 9 40.03	2.5056	23 8 34.8	9.887
13	13 16 21.95	2.3159	12 52 31.8	15.743	13	15 12 10.47	2.5091	23 18 23.3	9.727
14	13 18 41.01	5.3195	13 8 13.8	15.657	14	15 14 41.12	2.5126	23 28 2.1	9.567
15	13 21 0.29	2.3232	13 23 50.6	15.569	15	15 17 11.98	2.5160	23 37 31.3	9.406
16	13 23 19.80	2.3270	13 39 22.1	15.480	16	15 19 43.04	2.5193	23 46 50.8	9.243
17	13 25 39.53	2.3308	13 54 48.2	15.389	17	15 22 14.30	2.5226	23 56 0.5	9.079
18	13 27 59.49	2.3346	14 10 8.8	15.296	18	15 24 45.76	2.5259	24 5 0.3	8.914
19	13 30 19.68	2.3384	14 25 23.7	15.201	19	15 27 17.41	2.5291	24 13 50.2	8.749
20	13 32 40.10	2.3423	14 40 32.9	15.104	20	15 29 49.25	2.5321	24 22 30.2	8.582
21	13 35 0.76	2.3463	14 55 36.2	15.005	21	15 32 21.26	2.5350	24 31 0.1	8.415
22	13 37 21.66	2.3503	15 10 33.5	14.905	22	15 34 53.45	2.5380	24 39 20.0	8.247
23	13 39 42.80	2.3543	S.15 25 24.8	14.803	23	15 37 25.82	2.5408	S.24 47 29.7	8.077
	THURSDAY 10.					**SATURDAY 12.**			
0	13 42 4.17	2.3583	S.15 40 9.9	14.699	0	15 39 58.35	2.5435	S.24 55 29.3	7.907
1	13 44 25.79	2.3624	15 54 48.7	14.593	1	15 42 31.04	2.5462	25 3 18.6	7.736
2	13 46 47.66	2.3665	16 9 21.1	14.486	2	15 45 3.89	2.5487	25 10 57.6	7.565
3	13 49 9.77	2.3706	16 23 47.0	14.377	3	15 47 36.89	2.5512	25 18 26.4	7.393
4	13 51 32.13	2.3747	16 38 6.3	14.266	4	15 50 10.03	2.5535	25 25 44.8	7.220
5	13 53 54.74	2.3789	16 52 18.9	14.153	5	15 52 43.31	2.5557	25 32 52.8	7.046
6	13 56 17.60	2.3831	17 6 24.7	14.039	6	15 55 16.72	2.5578	25 39 50.3	6.871
7	13 58 40.71	2.3873	17 20 23.6	13.923	7	15 57 50.25	2.5599	25 46 37.3	6.696
8	14 1 4.07	2.3915	17 34 15.5	13.805	8	16 0 23.91	2.5619	25 53 13.8	6.521
9	14 3 27.69	2.3957	17 48 0.2	13.685	9	16 2 57.68	2.5637	25 59 39.8	6.345
10	14 5 51.56	2.4000	18 1 37.7	13.564	10	16 5 31.55	2.5654	26 5 55.2	6.168
11	14 8 15.69	2.4042	18 15 7.9	13.442	11	16 8 5.53	2.5671	26 11 59.9	5.990
12	14 10 40.07	2.4085	18 28 30.7	13.318	12	16 10 39.60	2.5686	26 17 54.0	5.812
13	14 13 4.71	2.4127	18 41 46.0	13.192	13	16 13 13.76	2.5699	26 23 37.4	5.634
14	14 15 29.60	2.4169	18 54 53.7	13.063	14	16 15 47.99	2.5711	26 29 10.1	5.456
15	14 17 54.74	2.4212	19 7 53.6	12.933	15	16 18 22.29	2.5722	26 34 32.1	5.277
16	14 20 20.14	2.4254	19 20 45.7	12.803	16	16 20 56.66	2.5732	26 39 43.3	5.097
17	14 22 45.79	2.4297	19 33 30.0	12.672	17	16 23 31.08	2.5741	26 44 43.7	4.918
18	14 25 11.70	2.4339	19 46 6.3	12.538	18	16 26 5.55	2.5748	26 49 33.4	4.738
19	14 27 37.86	2.4381	19 58 34.5	12.402	19	16 28 40.06	2.5755	26 54 12.3	4.557
20	14 30 4.27	2.4423	20 10 54.5	12.265	20	16 31 14.61	2.5761	26 58 40.3	4.376
21	14 32 30.94	2.4466	20 23 6.3	12.127	21	16 33 49.19	2.5765	27 2 57.4	4.195
22	14 34 57.86	2.4507	20 35 9.7	11.987	22	16 36 23.79	2.5767	27 7 3.7	4.015
23	14 37 25.03	2.4548	20 47 4.7	11.847	23	16 38 58.40	2.5768	27 10 59.2	3.835
24	14 39 52.44	2.4589	S.20 58 51.3	11.704	24	16 41 33.01	2.5768	S.27 14 43.9	3.654

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 41 33.01	2.5768	S.27 14 43.9	3.654
1	16 44 7.61	2.5767	27 18 17.7	3.472
2	16 46 42.21	2.5765	27 21 40.6	3.291
3	16 49 16.79	2.5761	27 24 52.6	3.110
4	16 51 51.34	2.5755	27 27 53.8	2.929
5	16 54 25.85	2.5748	27 30 44.1	2.748
6	16 57 0.32	2.5740	27 33 23.5	2.567
7	16 59 34.73	2.5730	27 35 52.1	2.387
8	17 2 9.08	2.5720	27 38 9.9	2.207
9	17 4 43.37	2.5708	27 40 16.9	2.026
10	17 7 17.58	2.5695	27 42 13.0	1.846
11	17 9 51.71	2.5680	27 43 58.4	1.667
12	17 12 25.74	2.5663	27 45 33.0	1.487
13	17 14 59.67	2.5646	27 46 56.8	1.308
14	17 17 33.49	2.5628	27 48 9.9	1.129
15	17 20 7.20	2.5608	27 49 12.3	0.951
16	17 22 40.78	2.5586	27 50 4.0	0.773
17	17 25 14.23	2.5563	27 50 45.0	0.595
18	17 27 47.54	2.5539	27 51 15.4	0.418
19	17 30 20.70	2.5514	27 51 35.2	0.242
20	17 32 53.71	2.5487	27 51 44.4	− 0.065
21	17 35 26.55	2.5459	27 51 43.0	+ 0.111
22	17 37 59.22	2.5430	27 51 31.1	0.285
23	17 40 31.71	2.5399	S.27 51 8.8	0.459

MONDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 43 4.01	2.5367	S.27 50 36.0	0.633
1	17 45 36.12	2.5335	27 49 52.8	0.806
2	17 48 8.03	2.5301	27 48 59.3	0.978
3	17 50 39.73	2.5266	27 47 55.5	1.149
4	17 53 11.22	2.5229	27 46 41.4	1.320
5	17 55 42.48	2.5191	27 45 17.1	1.490
6	17 58 13.51	2.5152	27 43 42.6	1.659
7	18 0 44.31	2.5112	27 41 58.0	1.827
8	18 3 14.86	2.5071	27 40 3.3	1.995
9	18 5 45.16	2.5029	27 37 58.6	2.162
10	18 8 15.21	2.4987	27 35 43.9	2.327
11	18 10 45.00	2.4942	27 33 19.3	2.492
12	18 13 14.51	2.4896	27 30 44.9	2.656
13	18 15 43.75	2.4850	27 28 0.6	2.819
14	18 18 12.71	2.4803	27 25 6.6	2.981
15	18 20 41.38	2.4754	27 22 2.9	3.142
16	18 23 9.76	2.4705	27 18 49.6	3.302
17	18 25 37.84	2.4655	27 15 26.7	3.461
18	18 28 5.62	2.4604	27 11 54.3	3.619
19	18 30 33.09	2.4552	27 8 12.4	3.776
20	18 33 0.25	2.4500	27 4 21.2	3.931
21	18 35 27.09	2.4447	27 0 20.7	4.086
22	18 37 53.61	2.4392	26 56 10.9	4.240
23	18 40 19.79	2.4336	26 51 51.9	4.392
24	18 42 45.64	2.4280	S.26 47 23.9	4.543

TUESDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 42 45.64	2.4280	S.26 47 23.9	4.543
1	18 45 11.15	2.4223	26 42 46.8	4.693
2	18 47 36.32	2.4166	26 38 0.7	4.842
3	18 50 1.15	2.4108	26 33 5.8	4.989
4	18 52 25.62	2.4049	26 28 2.0	5.136
5	18 54 49.74	2.3991	26 22 49.4	5.283
6	18 57 13.51	2.3932	26 17 28.1	5.427
7	18 59 36.92	2.3871	26 11 58.2	5.569
8	19 1 59.96	2.3809	26 6 19.8	5.711
9	19 4 22.63	2.3747	26 0 32.9	5.852
10	19 6 44.93	2.3686	25 54 37.6	5.991
11	19 9 6.86	2.3624	25 48 34.0	6.129
12	19 11 28.42	2.3562	25 42 22.1	6.266
13	19 13 49.60	2.3498	25 36 2.1	6.401
14	19 16 10.39	2.3433	25 29 34.0	6.536
15	19 18 30.80	2.3369	25 22 57.8	6.669
16	19 20 50.82	2.3305	25 16 13.7	6.800
17	19 23 10.46	2.3241	25 9 21.8	6.930
18	19 25 29.71	2.3176	25 2 22.1	7.059
19	19 27 48.57	2.3111	24 55 14.7	7.187
20	19 30 7.04	2.3045	24 47 59.7	7.313
21	19 32 25.11	2.2979	24 40 37.1	7.438
22	19 34 42.79	2.2913	24 33 7.1	7.562
23	19 37 0.07	2.2847	S.24 25 29.7	7.685

WEDNESDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 39 16.95	2.2780	S.24 17 44.9	7.807
1	19 41 33.43	2.2714	24 9 52.9	7.926
2	19 43 49.52	2.2648	24 1 53.8	8.044
3	19 46 5.21	2.2582	23 53 47.6	8.162
4	19 48 20.50	2.2515	23 45 34.4	8.277
5	19 50 35.39	2.2448	23 37 14.3	8.392
6	19 52 49.88	2.2382	23 28 47.3	8.506
7	19 55 3.97	2.2315	23 20 13.6	8.617
8	19 57 17.66	2.2248	23 11 33.2	8.728
9	19 59 30.95	2.2182	23 2 46.2	8.837
10	20 1 43.84	2.2115	22 53 52.7	8.946
11	20 3 56.33	2.2049	22 44 52.7	9.053
12	20 6 8.43	2.1983	22 35 46.3	9.158
13	20 8 20.13	2.1917	22 26 33.7	9.262
14	20 10 31.43	2.1851	22 17 14.9	9.365
15	20 12 42.34	2.1785	22 7 49.9	9.467
16	20 14 52.85	2.1719	21 58 18.9	9.566
17	20 17 2.97	2.1653	21 48 42.0	9.665
18	20 19 12.69	2.1587	21 38 59.1	9.763
19	20 21 22.02	2.1522	21 29 10.4	9.859
20	20 23 30.96	2.1458	21 19 16.0	9.954
21	20 25 39.52	2.1394	21 9 15.9	10.048
22	20 27 47.69	2.1330	20 59 10.2	10.141
23	20 29 55.48	2.1266	20 48 59.0	10.232
24	20 32 2.88	2.1202	S.20 38 42.4	10.321

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.
THURSDAY 17.					SATURDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″
0	20 32 2.88	2.1202	S.20 38 42.4	10.321	0	22 7 19.96	1.8709	S.11 2 13.0
1	20 34 9.90	2.1138	20 28 20.5	10.410	1	22 9 12.10	1.8672	10 48 55.7
2	20 36 16.54	2.1076	20 17 53.2	10.498	2	22 11 4.03	1.8636	10 35 36.2
3	20 38 22.81	2.1013	20 7 20.7	10.584	3	22 12 55.74	1.8600	10 22 14.7
4	20 40 28.70	2.0951	19 56 43.1	10.669	4	22 14 47.23	1.8564	10 8 51.2
5	20 42 34.22	2.0889	19 46 0.4	10.753	5	22 16 38.51	1.8529	9 55 25.8
6	20 44 39.37	2.0827	19 35 12.7	10.836	6	22 18 29.58	1.8495	9 41 58.5
7	20 46 44.15	2.0766	19 24 20.1	10.917	7	22 20 20.45	1.8462	9 28 29.4
8	20 48 48.56	2.0705	19 13 22.7	10.997	8	22 22 11.12	1.8429	9 14 58.5
9	20 50 52.61	2.0645	19 2 20.5	11.076	9	22 24 1.60	1.8397	9 1 25.9
10	20 52 56.30	2.0585	18 51 13.6	11.153	10	22 25 51.89	1.8366	8 47 51.6
11	20 54 59.63	2.0526	18 40 2.1	11.230	11	22 27 41.99	1.8335	8 34 15.7
12	20 57 2.61	2.0467	18 28 46.0	11.306	12	22 29 31.91	1.8305	8 20 38.3
13	20 59 5.23	2.0408	18 17 25.4	11.379	13	22 31 21.65	1.8276	8 6 59.4
14	21 1 7.50	2.0350	18 6 0.5	11.451	14	22 33 11.22	1.8247	7 53 19.0
15	21 3 9.43	2.0292	17 54 31.3	11.523	15	22 35 0.61	1.8218	7 39 37.3
16	21 5 11.01	2.0235	17 42 57.8	11.594	16	22 36 49.83	1.8190	7 25 54.3
17	21 7 12.25	2.0179	17 31 20.0	11.664	17	22 38 38.89	1.8164	7 12 9.9
18	21 9 13.16	2.0123	17 19 38.1	11.732	18	22 40 27.80	1.8138	6 58 24.3
19	21 11 13.73	2.0067	17 7 52.2	11.799	19	22 42 16.55	1.8112	6 44 37.6
20	21 13 13.97	2.0012	16 56 2.3	11.865	20	22 44 5.15	1.8087	6 30 49.7
21	21 15 13.88	1.9957	16 44 8.4	11.930	21	22 45 53.60	1.8063	6 17 0.7
22	21 17 13.46	1.9903	16 32 10.7	11.993	22	22 47 41.91	1.8040	6 3 10.7
23	21 19 12.72	1.9851	S.16 20 9.2	12.055	23	22 49 30.08	1.8018	S. 5 49 19.8
FRIDAY 18.					SUNDAY 20.			
0	21 21 11.67	1.9798	S.16 8 4.1	12.116	0	22 51 18.12	1.7996	S. 5 35 28.0
1	21 23 10.30	1.9746	15 55 55.3	12.177	1	22 53 6.03	1.7974	5 21 35.3
2	21 25 8.62	1.9694	15 43 42.9	12.237	2	22 54 53.81	1.7952	5 7 41.8
3	21 27 6.63	1.9642	15 31 26.9	12.295	3	22 56 41.46	1.7932	4 53 47.5
4	21 29 4.33	1.9592	15 19 7.5	12.352	4	22 58 28.99	1.7913	4 39 52.5
5	21 31 1.73	1.9542	15 6 44.7	12.407	5	23 0 16.41	1.7895	4 25 56.9
6	21 32 58.84	1.9493	14 54 18.7	12.461	6	23 2 3.73	1.7877	4 12 0.6
7	21 34 55.65	1.9444	14 41 49.4	12.515	7	23 3 50.94	1.7859	3 58 3.7
8	21 36 52.17	1.9396	14 29 16.9	12.568	8	23 5 38.04	1.7842	3 44 6.4
9	21 38 48.40	1.9348	14 16 41.2	12.620	9	23 7 25.04	1.7826	3 30 8.6
10	21 40 44.35	1.9301	14 4 2.5	12.671	10	23 9 11.95	1.7811	3 16 10.3
11	21 42 40.02	1.9255	13 51 20.7	12.721	11	23 10 58.77	1.7796	3 2 11.7
12	21 44 35.41	1.9209	13 38 36.0	12.769	12	23 12 45.50	1.7781	2 48 12.8
13	21 46 30.53	1.9164	13 25 48.4	12.817	13	23 14 32.14	1.7768	2 34 13.6
14	21 48 25.38	1.9120	13 12 58.0	12.863	14	23 16 18.71	1.7756	2 20 14.2
15	21 50 19.97	1.9077	13 0 4.9	12.908	15	23 18 5.21	1.7744	2 6 14.6
16	21 52 14.30	1.9033	12 47 9.1	12.952	16	23 19 51.64	1.7732	1 52 14.9
17	21 54 8.37	1.8990	12 34 10.7	12.995	17	23 21 38.00	1.7721	1 38 15.1
18	21 56 2.18	1.8948	12 21 9.7	13.037	18	23 23 24.29	1.7710	1 24 15.2
19	21 57 55.74	1.8907	12 8 6.2	13.079	19	23 25 10.52	1.7701	1 10 15.4
20	21 59 49.06	1.8867	11 55 0.2	13.119	20	23 26 56.70	1.7693	0 56 15.7
21	22 1 42.14	1.8827	11 41 51.9	13.158	21	23 28 42.83	1.7684	0 42 16.0
22	22 3 34.98	1.8787	11 28 41.2	13.197	22	23 30 28.91	1.7676	0 28 16.5
23	22 5 27.59	1.8748	11 15 28.2	13.235	23	23 32 14.95	1.7669	0 14 17.2
24	22 7 19.96	1.8709	S.11 2 13.0	13.271	24	23 34 0.94	1.7662	S. 0 0 18.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 21.					WEDNESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 34 0.94	1.7662	S. 0 0 18.2	13.981	0	0 59 16.79	1.8099	N.10 50 56.0	12.861
1	23 35 46.90	1.7657	N. 0 13 40.5	13.976	1	1 1 5.45	1.8122	11 3 46.4	12.818
2	23 37 32.83	1.7652	0 27 38.9	13.970	2	1 2 54.26	1.8147	11 16 34.2	12.775
3	23 39 18.73	1.7647	0 41 36.9	13.963	3	1 4 43.22	1.8172	11 29 19.4	12.732
4	23 41 4.60	1.7644	0 55 34.5	13.956	4	1 6 32.33	1.8197	11 42 2.0	12.687
5	23 42 50.46	1.7641	1 9 31.6	13.947	5	1 8 21.59	1.8223	11 54 41.8	12.641
6	23 44 36.30	1.7638	1 23 28.1	13.937	6	1 10 11.01	1.8250	12 7 18.9	12.595
7	23 46 22.12	1.7637	1 37 24.1	13.927	7	1 12 0.59	1.8277	12 19 53.2	12.548
8	23 48 7.94	1.7637	1 51 19.4	13.917	8	1 13 50.33	1.8304	12 32 24.7	12.501
9	23 49 53.76	1.7637	2 5 14.1	13.905	9	1 15 40.24	1.8333	12 44 53.4	12.453
10	23 51 39.58	1.7637	2 19 8.0	13.893	10	1 17 30.32	1.8362	12 57 19.1	12.403
11	23 53 25.40	1.7637	2 33 1.2	13.880	11	1 19 20.58	1.8391	13 9 41.8	12.354
12	23 55 11.22	1.7638	2 46 53.6	13.867	12	1 21 11.01	1.8420	13 22 1.6	12.304
13	23 56 57.05	1.7640	3 0 45.2	13.852	13	1 23 1.62	1.8450	13 34 18.3	12.252
14	23 58 42.90	1.7643	3 14 35.8	13.836	14	1 24 52.41	1.8481	13 46 31.8	12.199
15	0 0 28.77	1.7647	3 28 25.5	13.820	15	1 26 43.39	1.8512	13 58 42.1	12.145
16	0 2 14.66	1.7651	3 42 14.2	13.803	16	1 28 34.55	1.8544	14 10 49.2	12.092
17	0 4 0.58	1.7655	3 56 1.8	13.785	17	1 30 25.91	1.8576	14 22 53.1	12.038
18	0 5 46.52	1.7659	4 9 48.4	13.767	18	1 32 17.46	1.8608	14 34 53.7	11.982
19	0 7 32.49	1.7665	4 23 33.8	13.747	19	1 34 9.21	1.8641	14 46 50.9	11.925
20	0 9 18.50	1.7672	4 37 18.0	13.727	20	1 36 1.16	1.8675	14 58 44.7	11.867
21	0 11 4.56	1.7680	4 51 1.1	13.707	21	1 37 53.31	1.8709	15 10 35.0	11.809
22	0 12 50.66	1.7688	5 4 42.9	13.686	22	1 39 45.67	1.8744	15 22 21.8	11.750
23	0 14 36.81	1.7696	N. 5 18 23.4	13.663	23	1 41 38.24	1.8778	N.15 34 5.0	11.691
	TUESDAY 22.					THURSDAY 24.			
0	0 16 23.01	1.7704	N. 5 32 2.5	13.640	0	1 43 31.01	1.8813	N.15 45 44.7	11.631
1	0 18 9.26	1.7714	5 45 40.2	13.617	1	1 45 24.00	1.8850	15 57 20.7	11.569
2	0 19 55.58	1.7725	5 59 16.5	13.592	2	1 47 17.21	1.8887	16 8 53.0	11.507
3	0 21 41.96	1.7736	6 12 51.3	13.567	3	1 49 10.64	1.8923	16 20 21.5	11.443
4	0 23 28.41	1.7747	6 26 24.5	13.540	4	1 51 4.29	1.8961	16 31 46.2	11.380
5	0 25 14.92	1.7758	6 39 56.1	13.514	5	1 52 58.17	1.8999	16 43 7.1	11.316
6	0 27 1.50	1.7770	6 53 26.2	13.487	6	1 54 52.28	1.9037	16 54 24.1	11.250
7	0 28 48.16	1.7784	7 6 54.6	13.458	7	1 56 46.62	1.9076	17 5 37.1	11.183
8	0 30 34.91	1.7798	7 20 21.2	13.429	8	1 58 41.19	1.9115	17 16 46.1	11.116
9	0 32 21.74	1.7812	7 33 46.1	13.399	9	2 0 36.00	1.9154	17 27 51.0	11.048
10	0 34 8.66	1.7827	7 47 9.1	13.368	10	2 2 31.04	1.9193	17 38 51.8	10.979
11	0 35 55.67	1.7843	8 0 30.3	13.337	11	2 4 26.32	1.9234	17 49 48.5	10.910
12	0 37 42.78	1.7860	8 13 49.6	13.306	12	2 6 21.85	1.9275	18 0 41.0	10.839
13	0 39 29.99	1.7877	8 27 7.0	13.272	13	2 8 17.62	1.9316	18 11 29.2	10.767
14	0 41 17.30	1.7894	8 40 22.3	13.238	14	2 10 13.64	1.9357	18 22 13.1	10.695
15	0 43 4.71	1.7911	8 53 35.6	13.204	15	2 12 9.91	1.9399	18 32 52.6	10.622
16	0 44 52.23	1.7930	9 6 46.8	13.169	16	2 14 6.43	1.9442	18 43 27.7	10.548
17	0 46 39.87	1.7950	9 19 55.9	13.134	17	2 16 3.21	1.9484	18 53 58.4	10.473
18	0 48 27.63	1.7970	9 33 2.9	13.097	18	2 18 0.24	1.9527	19 4 24.5	10.397
19	0 50 15.51	1.7990	9 46 7.6	13.059	19	2 19 57.53	1.9570	19 14 46.0	10.320
20	0 52 3.51	1.8010	9 59 10.0	13.021	20	2 21 55.08	1.9613	19 25 2.9	10.243
21	0 53 51.63	1.8031	10 12 10.1	12.982	21	2 23 52.89	1.9657	19 35 15.2	10.166
22	0 55 39.88	1.8053	10 25 7.8	12.942	22	2 25 50.97	1.9702	19 45 22.8	10.087
23	0 57 28.27	1.8076	10 38 3.1	12.902	23	2 27 49.31	1.9746	19 55 25.6	10.006
24	0 59 16.79	1.8099	N.10 50 56.0	12.861	24	2 29 47.92	1.9791	N.20 5 23.5	9.925

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 25.					**SUNDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 29 47.92	1.9791	N.20 5 23.5	9.925	0	4 10 13.88	2.2053	N.26 11 40.0	4.998
1	2 31 46.80	1.9836	20 15 16.6	9.843	1	4 12 26.33	2.2098	26 16 36.2	4.875
2	2 33 45.95	1.9881	20 25 4.7	9.760	2	4 14 39.05	2.2142	26 21 25.0	4.751
3	2 35 45.37	1.9927	20 34 47.8	9.676	3	4 16 52.03	2.2185	26 26 6.3	4.625
4	2 37 45.07	1.9972	20 44 25.8	9.592	4	4 19 5.27	2.2228	26 30 40.0	4.499
5	2 39 45.04	2.0018	20 53 58.8	9.507	5	4 21 18.76	2.2270	26 35 6.1	4.372
6	2 41 45.29	2.0065	21 3 26.6	9.420	6	4 23 32.51	2.2312	26 39 24.6	4.244
7	2 43 45.82	2.0112	21 12 49.2	9.333	7	4 25 46.51	2.2354	26 43 35.4	4.115
8	2 45 46.63	2.0158	21 22 6.6	9.245	8	4 28 0.76	2.2395	26 47 38.4	3.986
9	2 47 47.71	2.0204	21 31 18.6	9.156	9	4 30 15.25	2.2435	26 51 33.7	3.857
10	2 49 49.07	2.0251	21 40 25.3	9.067	10	4 32 29.98	2.2475	26 55 21.2	3.726
11	2 51 50.72	2.0299	21 49 26.6	8.976	11	4 34 44.95	2.2515	26 59 0.8	3.594
12	2 53 52.66	2.0347	21 58 22.4	8.884	12	4 37 0.16	2.2554	27 2 32.5	3.462
13	2 55 54.88	2.0394	22 7 12.7	8.792	13	4 39 15.60	2.2592	27 5 56.3	3.329
14	2 57 57.39	2.0442	22 15 57.4	8.698	14	4 41 31.27	2.2631	27 9 12.0	3.195
15	3 0 0.18	2.0489	22 24 36.5	8.604	15	4 43 47.17	2.2669	27 12 19.7	3.061
16	3 2 3.26	2.0537	22 33 9.9	8.509	16	4 46 3.30	2.2706	27 15 19.3	2.926
17	3 4 6.63	2.0585	22 41 37.6	8.412	17	4 48 19.64	2.2742	27 18 10.8	2.791
18	3 6 10.28	2.0633	22 49 59.4	8.315	18	4 50 36.20	2.2778	27 20 54.2	2.655
19	3 8 14.22	2.0682	22 58 15.4	8.218	19	4 52 52.97	2.2813	27 23 29.4	2.517
20	3 10 18.46	2.0731	23 6 25.6	8.120	20	4 55 9.95	2.2848	27 25 56.3	2.379
21	3 12 22.99	2.0779	23 14 29.8	8.020	21	4 57 27.14	2.2882	27 28 14.9	2.241
22	3 14 27.81	2.0827	23 22 28.0	7.919	22	4 59 44.53	2.2914	27 30 25.2	2.102
23	3 16 32.92	2.0875	N.23 30 20.1	7.817	23	5 2 2.11	2.2946	N.27 32 27.2	1.963
	SATURDAY 26.					**MONDAY 28.**			
0	3 18 38.31	2.0923	N.23 38 6.1	7.715	0	5 4 19.88	2.2978	N.27 34 20.8	1.823
1	3 20 43.99	2.0972	23 45 45.9	7.613	1	5 6 37.84	2.3009	27 36 6.0	1.682
2	3 22 49 97	2.1021	23 53 19.6	7.509	2	5 8 55.99	2.3040	27 37 42.7	1.541
3	3 24 56.24	2.1069	24 0 47.0	7.403	3	5 11 14.32	2.3069	27 39 10.9	1.399
4	3 27 2.80	2.1117	24 8 8.0	7.297	4	5 13 32.82	2.3098	27 40 30.6	1.256
5	3 29 9.65	2.1166	24 15 22.7	7.191	5	5 15 51.50	2.3127	27 41 41.7	1.113
6	3 31 16.79	2.1214	24 22 30.9	7.083	6	5 18 10.35	2.3155	27 42 44.2	0.970
7	3 33 24.22	2.1262	24 29 32.6	6.974	7	5 20 29.36	2.3182	27 43 38.1	0.827
8	3 35 31.94	2.1310	24 36 27.8	6.866	8	5 22 48.53	2.3208	27 44 23.4	0.682
9	3 37 39.94	2.1358	24 43 16.5	6.756	9	5 25 7.85	2.3233	27 45 0.0	0.537
10	3 39 48.23	2.1406	24 49 58.5	6.644	10	5 27 27.32	2.3257	27 45 27.9	0.392
11	3 41 56.81	2.1454	24 56 33.8	6.532	11	5 29 46.93	2.3281	27 45 47.0	0.246
12	3 44 5.68	2.1501	25 3 2.3	6.418	12	5 32 6.69	2.3304	27 45 57.4	+ 0.100
13	3 46 14.83	2.1548	25 9 24.0	6.305	13	5 34 26.58	2.3326	27 45 59.0	− 0.047
14	3 48 24.26	2.1596	25 15 38.9	6.191	14	5 36 46.60	2.3347	27 45 51.8	0.194
15	3 50 33.98	2.1643	25 21 46.9	6.076	15	5 39 6.75	2.3368	27 45 35.7	0.342
16	3 52 43.98	2.1690	25 27 48.0	5.959	16	5 41 27.02	2.3388	27 45 10.8	0.489
17	3 54 54.26	2.1736	25 33 42.0	5.842	17	5 43 47.40	2.3406	27 44 37.0	0.637
18	3 57 4.81	2.1782	25 39 29.0	5.724	18	5 46 7.89	2.3424	27 43 54.3	0.786
19	3 59 15.64	2.1827	25 45 8.9	5.605	19	5 48 28.49	2.3442	27 43 2.7	0.935
20	4 1 26.74	2.1873	25 50 41.6	5.485	20	5 50 49.19	2.3458	27 42 2.1	1.085
21	4 3 38.12	2.1919	25 56 7.1	5.365	21	5 53 9.99	2.3474	27 40 52.5	1.235
22	4 5 49.77	2.1964	26 1 25.4	5.244	22	5 55 30.88	2.3489	27 39 33.9	1.384
23	4 8 1.69	2.2009	26 6 36.4	5.122	23	5 57 51.85	2.3503	27 38 6.4	1.533
24	4 10 13.88	2.2053	N.26 11 40.0	4.998	24	6 0 12 91	2.3517	N.27 36 29.9	1.684

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 29.			
h m s	s	° ′ ″	″
6 0 12.91	2.3517	N.27 36 29.9	1.684
6 2 34.05	2.3528	27 34 44.3	1.835
6 4 55.25	2.3539	27 32 49.7	1.986
6 7 16.52	2.3550	27 30 46.0	2.137
6 9 37.85	2.3559	27 28 33.3	2.288
6 11 59.23	2.3568	27 26 11.5	2.439
6 14 20.67	2.3577	27 23 40.6	2.591
6 16 42.16	2.3584	27 21 0.6	2.742
6 19 3.68	2.3590	27 18 11.5	2.893
6 21 25.24	2.3596	27 15 13.4	3.045
6 23 46.83	2.3601	27 12 6.1	3.197
6 26 8.45	2.3605	27 8 49.7	3.350
6 28 30.09	2.3608	27 5 24.1	3.502
6 30 51.74	2.3610	27 1 49.4	3.654
6 33 13.41	2.3612	26 58 5.6	3.806
6 35 35.09	2.3613	26 54 12.7	3.957
6 37 56.77	2.3613	26 50 10.7	4.109
6 40 18.45	2.3612	26 45 59.6	4.262
6 42 40.12	2.3611	26 41 39.3	4.414
6 45 1.78	2.3608	26 37 9.9	4.566
6 47 23.42	2.3605	26 32 31.4	4.717
6 49 45.04	2.3602	26 27 43.9	4.868
6 52 6.64	2.3597	26 22 47.3	5.019
6 54 28.21	2.3592	N.26 17 41.6	5.171
WEDNESDAY 30.			
6 56 49.75	2.3587	N.26 12 26.8	5.322
6 59 11.25	2.3580	26 7 3.0	5.472
7 1 32.71	2.3572	26 1 30.1	5.623
7 3 54.12	2.3564	25 55 48.2	5.773
7 6 15.48	2.3556	25 49 57.3	5.923
7 8 36.79	2.3547	25 43 57.4	6.073
7 10 58.04	2.3537	25 37 48.5	6.222
7 13 19.23	2.3526	25 31 30.7	6.372
7 15 40.35	2.3515	25 25 3.9	6.522
7 18 1.41	2.3504	25 18 28.1	6.671
7 20 22.40	2.3492	25 11 43.4	6.818
7 22 43.31	2.3479	25 4 49.9	6.966
7 25 4.14	2.3465	24 57 47.5	7.113
7 27 24.89	2.3451	24 50 36.3	7.260
7 29 45.55	2.3436	24 43 16.3	7.407
7 32 6.12	2.3421	24 35 47.4	7.554
7 34 26.60	2.3406	24 28 9.8	7.699
7 36 46.99	2.3390	24 20 23.5	7.845
7 39 7.28	2.3373	24 12 28.4	7.990
7 41 27.47	2.3356	24 4 24.7	8.134
7 43 47.56	2.3339	23 56 12.3	8.278
7 46 7.54	2.3321	23 47 51.3	8.422
7 48 27.41	2.3302	23 39 21.7	8.564
7 50 47.17	2.3284	23 30 43.6	8.706
7 53 6.82	2.3265	N.23 21 57.0	8.847

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY, OCTOBER 1.				
	h m s	s	° ′ ″	″
0	7 53 6.82	2.3265	N.23 21 57.0	8.847

PHASES OF THE MOON.

			d	h	m
●	New Moon	Sept.	7	1	43.3
☽	First Quarter		13	16	9.5
○	Full Moon		21	10	49.3
☾	Last Quarter		29	13	58.4

			d	h
☾	Perigee	Sept.	8	7.9
☾	Apogee		23	14.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″
1	α Pegasi	W.	87 55 5	2989	89 25 31	2973	90 56 17	2958	92 27 22
	α Arietis	W.	45 10 34	2829	46 44 24	2811	48 18 37	2795	49 53 12
	SUN	E.	78 2 28	3145	76 35 13	3129	75 7 38	3111	73 39 42
2	α Arietis	W.	57 51 54	2688	59 28 50	2670	61 6 10	2652	62 43 55
	Aldebaran	W.	27 36 13	3018	29 6 4	2966	30 36 59	2920	32 8 53
	MARS	W.	24 51 54	2990	26 22 19	2956	27 53 27	2925	29 25 14
	SUN	E.	66 14 37	3003	64 44 28	2985	63 13 56	2965	61 43 0
3	α Arietis	W.	70 59 3	2539	72 39 22	2520	74 20 7	2502	76 1 18
	Aldebaran	W.	40 1 7	2700	41 37 47	2669	43 15 8	2641	44 53 7
	MARS	W.	37 13 6	2765	38 48 20	2741	40 24 6	2717	42 0 23
	SUN	E.	54 2 11	2848	52 28 46	2828	50 54 55	2809	49 20 39
4	α Arietis	W.	84 33 48	2391	86 17 36	2373	88 1 50	2355	89 46 29
	Aldebaran	W.	53 12 3	2489	54 53 32	2467	56 35 32	2445	58 18 3
	MARS	W.	50 9 24	2585	51 48 40	2564	53 28 25	2543	55 8 38
	SUN	E.	41 22 53	2692	39 46 3	2674	38 8 48	2655	36 31 8
5	Aldebaran	W.	66 58 0	2326	68 43 22	2308	70 29 10	2292	72 15 22
	MARS	W.	63 36 27	2431	65 19 18	2414	67 2 33	2398	68 46 11
	SUN	E.	28 16 51	2553	26 36 51	2538	24 56 30	2523	23 15 49
8	SUN	W.	13 20 40	2350	15 5 26	2342	16 50 24	2337	18 35 30
	SATURN	E.	45 42 11	2118	43 51 39	2122	42 1 13	2128	40 10 56
	Antares	E.	68 51 44	2023	66 58 45	2023	65 5 46	2023	63 12 47
9	SUN	W.	27 21 31	2338	29 6 35	2342	30 51 33	2347	32 36 24
	Antares	E.	53 48 31	2037	51 55 55	2042	50 3 27	2048	48 11 7
	α Aquilæ	E.	105 52 42	2781	104 17 49	2774	102 42 47	2769	101 7 38
10	SUN	W.	41 18 11	2393	43 1 56	2402	44 45 28	2412	46 28 45
	Antares	E.	38 52 9	2093	37 0 59	2103	35 10 4	2113	33 19 24
	α Aquilæ	E.	93 11 40	2779	91 36 44	2787	90 1 59	2797	88 27 27
11	SUN	W.	55 1 6	2485	56 42 41	2498	58 23 57	2512	60 4 54
	VENUS	W.	37 52 53	2601	39 31 47	2612	41 10 25	2624	42 48 47
	α Aquilæ	E.	80 39 10	2890	79 6 38	2911	77 34 33	2934	76 2 57
	Fomalhaut	E.	105 4 21	2523	103 23 40	2531	101 43 10	2539	100 2 51
12	SUN	W.	68 24 41	2599	70 3 37	2615	71 42 12	2630	73 20 26
	VENUS	W.	50 56 6	2707	52 32 37	2721	54 8 49	2737	55 44 40
	Spica	W.	36 10 3	2298	37 56 6	2311	39 41 49	2325	41 27 12
	α Aquilæ	E.	68 33 26	3110	67 5 28	3145	65 38 13	3183	64 11 44
	Fomalhaut	E.	91 44 59	2609	90 6 16	2623	88 27 52	2638	86 49 48
13	SUN	W.	81 26 19	2724	83 2 27	2740	84 38 14	2756	86 13 40
	VENUS	W.	63 38 56	2829	65 12 46	2845	66 46 16	2860	68 19 26
	Spica	W.	50 9 4	2410	51 52 25	2424	53 35 26	2438	55 18 6
	SATURN	W.	28 17 26	2583	29 56 45	2583	31 36 4	2585	33 15 20
	Fomalhaut	E.	78 45 1	2741	77 9 15	2760	75 33 54	2780	73 59 0
	α Pegasi	E.	100 34 55	2601	98 56 1	2614	97 17 25	2627	95 39 7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	α Pegasi	W.	93 58 47	2927	95 30 32	2912	97 2 36	2896	98 35 0	2880
	α Arietis	W.	51 28 10	2760	53 3 31	2742	54 39 15	2724	56 15 23	2707
	Sun	E.	72 11 25	3077	70 42 47	3058	69 13 46	3040	67 44 23	3022
2	α Arietis	W.	64 22 6	2614	66 0 42	2596	67 39 43	2577	69 19 10	2558
	Aldebaran	W.	33 41 43	2836	35 15 24	2799	36 49 53	2764	38 25 8	2731
	Mars	W.	30 57 39	2867	32 30 40	2841	34 4 15	2815	35 38 24	2789
	Sun	E.	60 11 40	2927	58 39 55	2908	57 7 46	2887	55 35 11	2868
3	α Arietis	W.	77 42 56	2464	79 25 0	2445	81 7 30	2427	82 50 26	2409
	Aldebaran	W.	46 31 43	2587	48 10 56	2561	49 50 44	2536	51 31 7	2512
	Mars	W.	43 37 11	2672	45 14 29	2649	46 52 18	2627	48 30 36	2605
	Sun	E.	47 45 57	2769	46 10 49	2750	44 35 16	2731	42 59 17	2712
4	α Arietis	W.	91 31 34	2321	93 17 3	2304	95 2 57	2287	96 49 15	2271
	Aldebaran	W.	60 1 5	2403	61 44 36	2382	63 28 36	2363	65 13 4	2344
	Mars	W.	56 49 19	2504	58 30 27	2485	60 12 1	2467	61 54 1	2448
	Sun	E.	34 53 4	2620	33 14 36	2602	31 35 44	2585	29 56 29	2569
5	Aldebaran	W.	74 1 58	2260	75 48 57	2245	77 36 18	2231	79 24 0	2216
	Mars	W.	70 30 13	2366	72 14 37	2350	73 59 23	2336	75 44 30	2322
	Sun	E.	21 34 50	2497	19 53 33	2487	18 12 1	2477	16 30 15	2467
8	Sun	W.	20 20 42	2331	22 5 56	2331	23 51 10	2333	25 36 22	2335
	Saturn	E.	38 20 50	2144	36 30 58	2155	34 41 23	2169	32 52 9	2185
	Antares	E.	61 19 49	2025	59 26 53	2027	57 34 1	2030	55 41 13	2033
9	Sun	W.	34 21 6	2359	36 5 39	2367	37 50 1	2375	39 34 12	2383
	Antares	E.	46 18 57	2061	44 26 57	2068	42 35 9	2076	40 43 33	2084
	α Aquilæ	E.	99 32 24	2764	97 57 9	2765	96 21 55	2768	94 46 45	2772
10	Sun	W.	48 11 47	2435	49 54 32	2446	51 37 1	2459	53 19 12	2471
	Antares	E.	31 29 0	2134	29 38 52	2145	27 49 1	2157	25 59 28	2169
	α Aquilæ	E.	86 53 9	2821	85 19 8	2836	83 45 27	2852	82 12 7	2870
11	Sun	W.	61 45 32	2540	63 25 50	2555	65 5 47	2569	66 45 24	2584
	Venus	W.	44 26 51	2650	46 4 38	2664	47 42 6	2678	49 19 16	2692
	α Aquilæ	E.	74 31 53	2985	73 1 21	3014	71 31 25	3043	70 2 6	3075
	Fomalhaut	E.	98 22 46	2559	96 42 55	2570	95 3 19	2583	93 24 0	2596
12	Sun	W.	74 58 19	2661	76 35 51	2678	78 13 1	2693	79 49 50	2708
	Venus	W.	57 20 12	2766	58 55 24	2782	60 30 15	2798	62 4 46	2814
	Spica	W.	43 12 15	2353	44 56 58	2367	46 41 20	2381	48 25 22	2395
	α Aquilæ	E.	62 46 4	3268	61 21 15	3313	59 57 19	3363	58 34 20	3415
	Fomalhaut	E.	85 12 6	2669	83 34 45	2687	81 57 47	2704	80 21 12	2722
13	Sun	W.	87 48 45	2787	89 23 30	2803	90 57 54	2818	92 31 58	2834
	Venus	W.	69 52 15	2892	71 24 44	2907	72 56 54	2924	74 28 43	2939
	Spica	W.	57 0 26	2467	58 42 26	2481	60 24 6	2495	62 5 26	2510
	Saturn	W.	34 54 31	2594	36 33 34	2600	38 12 29	2607	39 51 14	2616
	Fomalhaut	E.	72 24 32	2821	70 50 32	2843	69 17 0	2866	67 43 57	2890
	α Pegasi	E.	94 1 7	2655	92 23 26	2668	90 46 3	2682	89 8 59	2696

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
14	Sun	W.	94 5 42	2849	95 39 6	2864	97 12 11	2879	98 44 57	2894
	Venus	W.	76 0 13	2954	77 31 24	2969	79 2 15	2984	80 32 48	2999
	Spica	W.	63 46 26	2523	65 27 7	2537	67 7 29	2551	68 47 32	2564
	Saturn	W.	41 29 47	2625	43 8 8	2634	44 46 17	2643	46 24 13	2654
	Fomalhaut	E.	66 11 25	2914	64 39 24	2939	63 7 54	2965	61 36 57	2991
	α Pegasi	E.	87 32 14	2711	85 55 49	2725	84 19 43	2741	82 43 57	2756
15	Sun	W.	106 24 7	2965	107 55 3	2979	109 25 42	2993	110 56 3	3006
	Venus	W.	88 0 55	3072	89 29 39	3086	90 58 6	3100	92 26 16	3114
	Spica	W.	77 3 13	2629	78 41 28	2642	80 19 26	2655	81 57 7	2666
	Saturn	W.	54 30 21	2707	56 6 52	2718	57 43 8	2729	59 19 10	2739
	Antares	W.	31 9 31	2626	32 47 51	2639	34 25 53	2651	36 3 39	2663
	Fomalhaut	E.	54 11 3	3146	52 43 49	3182	51 17 18	3220	49 51 32	3260
	α Pegasi	E.	74 50 9	2834	73 16 25	2851	71 43 3	2866	70 10 1	2883
16	Spica	W.	90 1 32	2725	91 37 39	2735	93 13 32	2747	94 49 10	2757
	Saturn	W.	67 15 49	2792	68 50 27	2802	70 24 52	2812	71 59 4	2822
	Antares	W.	44 8 26	2721	45 44 38	2732	47 20 35	2743	48 56 18	2754
	α Pegasi	E.	62 30 21	2972	60 59 33	2991	59 29 9	3010	57 59 9	3030
	α Arietis	E.	103 58 5	2738	102 22 16	2749	100 46 41	2760	99 11 20	2770
17	Saturn	W.	79 46 52	2870	81 19 49	2880	82 52 34	2888	84 25 8	2898
	Antares	W.	56 51 28	2803	58 25 52	2813	60 0 3	2822	61 34 2	2831
	α Arietis	E.	91 17 58	2820	89 43 56	2829	88 10 6	2838	86 36 28	2847
18	Saturn	W.	92 5 9	2939	93 36 38	2948	95 7 56	2956	96 39 4	2964
	Antares	W.	69 21 10	2873	70 54 4	2881	72 26 47	2889	73 59 20	2896
	α Arietis	E.	78 51 7	2891	77 18 36	2898	75 46 15	2906	74 14 4	2914
	Aldebaran	E.	110 31 52	2956	109 0 44	2963	107 29 45	2969	105 58 54	2975
19	Saturn	W.	104 12 20	3001	105 42 31	3008	107 12 34	3015	108 42 28	3022
	Antares	W.	81 39 48	2931	83 11 28	2938	84 42 59	2944	86 14 22	2950
	α Arietis	E.	66 35 34	2951	65 4 20	2958	63 33 15	2965	62 2 18	2972
	Aldebaran	E.	98 26 32	3006	96 56 27	3012	95 26 29	3018	93 56 39	3024
	Mars	E.	108 24 36	3114	106 56 44	3121	105 29 0	3126	104 1 22	3133
20	Antares	W.	93 49 23	2980	95 20 1	2985	96 50 33	2990	98 20 58	2995
	α Aquilæ	W.	48 22 29	4379	49 28 9	4322	50 34 41	4270	51 42 1	4222
	α Arietis	E.	54 29 42	3005	52 59 35	3012	51 29 37	3018	49 59 46	3025
	Aldebaran	E.	86 29 17	3053	85 0 10	3060	83 31 11	3065	82 2 18	3070
	Mars	E.	96 44 58	3159	95 18 0	3165	93 51 9	3170	92 24 24	3175
21	α Aquilæ	W.	57 28 48	4038	58 39 50	4011	59 51 19	3984	61 3 14	3961
	α Arietis	E.	42 32 33	3056	41 3 30	3061	39 34 36	3070	38 5 50	3077
	Aldebaran	E.	74 39 37	3098	73 11 25	3104	71 43 20	3110	70 15 22	3115
	Mars	E.	85 12 4	3197	83 45 51	3202	82 19 44	3206	80 53 42	3209
22	α Aquilæ	W.	67 8 3	3871	68 21 52	3856	69 35 56	3844	70 50 13	3832
	Fomalhaut	W.	41 1 48	3860	42 15 48	3818	43 30 32	3780	44 45 55	3746
	Aldebaran	E.	62 57 13	3143	61 29 55	3149	60 2 45	3154	58 35 41	3161
	Mars	E.	73 44 36	3227	72 18 59	3231	70 53 26	3233	69 27 56	3236
	Pollux	E.	105 16 42	3060	103 47 43	3063	102 18 48	3065	100 49 56	3069

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.			P. L. of Diff.	XVh.			P. L. of Diff.	XVIIIh.			P. L. of Diff.	XXIh.			P. L. of Diff.
			°	′	″		°	′	″		°	′	″		°	′	″	
14	Sun	W.	100	17	24	2909	101	49	32	2923	103	21	22	2938	104	52	53	2951
	Venus	W.	82	3	2	3014	83	32	58	3029	85	2	35	3043	86	31	54	3058
	Spica	W.	70	27	17	2577	72	6	43	2591	73	45	51	2604	75	24	41	2617
	Saturn	W.	48	1	55	2664	49	39	23	2675	51	16	37	2686	52	53	36	2696
	Fomalhaut	E.	60	6	33	3019	58	36	44	3049	57	7	32	3080	55	38	58	3112
	α Pegasi	E.	81	8	31	2771	79	33	25	2786	77	58	39	2802	76	24	14	2818
15	Sun	W.	112	26	8	3020	113	55	56	3033	115	25	28	3046	116	54	44	3058
	Venus	W.	93	54	9	3127	95	21	46	3139	96	49	8	3153	98	16	14	3166
	Spica	W.	83	34	32	2679	85	11	40	2690	86	48	33	2702	88	25	10	2713
	Saturn	W.	60	54	58	2750	62	30	31	2760	64	5	51	2771	65	40	57	2782
	Antares	W.	37	41	8	2675	39	18	21	2687	40	55	18	2698	42	32	0	2710
	Fomalhaut	E.	48	26	34	3303	47	2	26	3348	45	39	10	3398	44	16	51	3451
	α Pegasi	E.	68	37	21	2900	67	5	2	2918	65	33	6	2935	64	1	32	2954
16	Spica	W.	96	24	34	2767	97	59	45	2778	99	34	42	2788	101	9	26	2798
	Saturn	W.	73	33	3	2832	75	6	49	2842	76	40	22	2852	78	13	43	2861
	Antares	W.	50	31	46	2764	52	7	1	2774	53	42	3	2784	55	16	52	2794
	α Pegasi	E.	56	29	33	3051	55	0	23	3073	53	31	40	3095	52	3	24	3119
	α Arietis	E.	97	36	13	2781	96	1	20	2791	94	26	40	2801	92	52	13	2810
17	Saturn	W.	85	57	30	2906	87	29	41	2915	89	1	41	2924	90	33	30	2931
	Antares	W.	63	7	50	2839	64	41	27	2848	66	14	52	2857	67	48	6	2865
	α Arietis	E.	85	3	1	2856	83	29	46	2865	81	56	42	2873	80	23	49	2882
18	Saturn	W.	98	10	2	2971	99	40	51	2979	101	11	30	2986	102	42	0	2994
	Antares	W.	75	31	44	2903	77	3	59	2911	78	36	4	2918	80	8	0	2924
	α Arietis	E.	72	42	3	2922	71	10	12	2929	69	38	30	2936	68	6	57	2944
	Aldebaran	E.	104	28	10	2981	102	57	34	2988	101	27	6	2993	99	56	45	3000
19	Saturn	W.	110	12	13	3030	111	41	49	3036	113	11	17	3043	114	40	37	3050
	Antares	W.	87	45	37	2956	89	16	45	2962	90	47	45	2968	92	18	38	2974
	α Arietis	E.	60	31	30	2978	59	0	50	2985	57	30	19	2992	55	59	56	2999
	Aldebaran	E.	92	26	56	3030	90	57	20	3036	89	27	52	3042	87	58	31	3047
	Mars	E.	102	33	52	3138	101	6	29	3143	99	39	12	3149	98	12	2	3154
20	Antares	W.	99	51	17	3001	101	21	29	3005	102	51	36	3009	104	21	37	3014
	α Aquilæ	W.	52	50	6	4178	53	58	53	4139	55	8	17	4103	56	18	16	4070
	α Arietis	E.	48	30	4	3031	47	0	30	3037	45	31	3	3043	44	1	44	3050
	Aldebaran	E.	80	33	32	3076	79	4	53	3082	77	36	21	3087	76	7	56	3092
	Mars	E.	90	57	45	3180	89	31	12	3184	88	4	44	3188	86	38	21	3193
21	α Aquilæ	W.	62	15	32	3939	63	28	12	3920	64	41	11	3902	65	54	29	3886
	α Arietis	E.	36	37	12	3084	35	8	43	3092	33	40	24	3100	32	12	14	3108
	Aldebaran	E.	68	47	31	3121	67	19	47	3126	65	52	9	3132	64	24	38	3137
	Mars	E.	79	27	44	3214	78	1	51	3217	76	36	2	3220	75	10	17	3224
22	α Aquilæ	W.	72	4	42	3821	73	19	22	3813	74	34	11	3804	75	49	9	3796
	Fomalhaut	W.	46	1	54	3714	47	18	26	3687	48	35	27	3662	49	52	55	3637
	Aldebaran	E.	57	8	45	3167	55	41	56	3173	54	15	14	3179	52	48	40	3186
	Mars	E.	68	2	30	3239	66	37	7	3242	65	11	47	3244	63	46	30	3247
	Pollux	E.	99	21	8	3071	97	52	23	3073	96	23	40	3075	94	55	0	3078

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	*a* Aquilæ	W.	77 4 15	3790	78 19 28	3784	79 34 47	3778	80 50 12	3773
	Fomalhaut	W.	51 10 49	3616	52 29 6	3597	53 47 44	3579	55 6 41	3562
	Aldebaran	E.	51 22 14	3193	49 55 56	3200	48 29 47	3207	47 3 46	3215
	MARS	E.	62 21 16	3248	60 56 4	3250	59 30 54	3253	58 5 47	3253
	Pollux	E.	93 26 23	3079	91 57 48	3081	90 29 15	3082	89 0 44	3083
24	*a* Aquilæ	W.	87 8 16	3760	88 24 0	3758	89 39 46	3758	90 55 32	3757
	Fomalhaut	W.	61 45 38	3495	63 6 8	3485	64 26 49	3474	65 47 42	3465
	a Pegasi	W.	39 29 15	3572	40 48 20	3543	42 7 57	3516	43 28 3	3493
	Aldebaran	E.	39 56 17	3265	38 31 24	3276	37 6 45	3290	35 42 22	3305
	MARS	E.	51 0 35	3260	49 35 37	3260	48 10 39	3261	46 45 42	3261
	Pollux	E.	81 38 27	3087	80 10 2	3087	78 41 36	3087	77 13 10	3087
25	*a* Aquilæ	W.	97 14 15	3765	98 29 54	3768	99 45 29	3771	101 1 1	3776
	Fomalhaut	W.	72 34 38	3423	73 56 29	3415	75 18 29	3408	76 40 37	3400
	a Pegasi	W.	50 14 35	3397	51 36 55	3381	52 59 33	3367	54 22 27	3353
	MARS	E.	39 41 2	3262	38 16 6	3263	36 51 11	3263	35 26 16	3263
	Pollux	E.	69 50 47	3080	68 22 13	3078	66 53 37	3076	65 24 58	3073
	Regulus	E.	106 44 26	3069	105 15 38	3067	103 46 48	3065	102 17 55	3061
	JUPITER	E.	107 45 23	3143	106 18 5	3140	104 50 44	3138	103 23 20	3135
26	Fomalhaut	W.	83 33 14	3367	84 56 8	3361	86 19 9	3355	87 42 17	3349
	a Pegasi	W.	61 20 47	3291	62 45 9	3279	64 9 45	3268	65 34 34	3256
	Pollux	E.	58 0 48	3056	56 31 44	3052	55 2 35	3047	53 33 20	3042
	Regulus	E.	94 52 26	3042	93 23 5	3037	91 53 38	3031	90 24 4	3026
	JUPITER	E.	96 5 20	3115	94 37 29	3110	93 9 31	3105	91 41 27	3099
27	Fomalhaut	W.	94 39 45	3318	96 3 36	3312	97 27 34	3306	98 51 39	3300
	a Pegasi	W.	72 41 57	3201	74 8 5	3190	75 34 26	3179	77 1 0	3168
	a Arietis	W.	29 23 39	3060	30 52 38	3046	32 21 54	3033	33 51 26	3019
	Pollux	E.	46 5 26	3013	44 35 29	3005	43 5 23	2998	41 35 8	2991
	Regulus	E.	82 54 24	2993	81 24 2	2985	79 53 30	2976	78 22 47	2968
	JUPITER	E.	84 19 12	3065	82 50 19	3056	81 21 16	3047	79 52 2	3039
	SUN	E.	119 15 48	3370	117 52 57	3361	116 29 56	3352	115 6 45	3343
28	*a* Pegasi	W.	84 17 12	3111	85 45 8	3099	87 13 19	3087	88 41 44	3075
	a Arietis	W.	41 23 8	2955	42 54 17	2942	44 25 42	2929	45 57 24	2916
	Regulus	E.	70 46 22	2919	69 14 27	2908	67 42 18	2896	66 9 54	2884
	JUPITER	E.	72 23 1	2989	70 52 35	2977	69 21 54	2966	67 50 59	2954
	SUN	E.	108 7 55	3288	106 43 30	3277	105 18 52	3265	103 53 59	3253
29	*a* Pegasi	W.	96 7 35	3014	97 37 31	3001	99 7 43	2988	100 38 11	2975
	a Arietis	W.	53 40 19	2845	55 13 49	2829	56 47 39	2814	58 21 49	2798
	Regulus	E.	58 23 57	2820	56 49 55	2805	55 15 34	2791	53 40 54	2776
	JUPITER	E.	60 12 25	2888	58 39 51	2874	57 6 59	2859	55 33 48	2845
	SUN	E.	96 45 39	3182	95 19 8	3166	93 52 18	3151	92 25 10	3135
30	*a* Arietis	W.	66 17 51	2716	67 54 9	2699	69 30 50	2682	71 7 54	2664
	Aldebaran	W.	35 28 26	2912	37 0 30	2880	38 33 15	2848	40 6 40	2816
	Regulus	E.	45 42 36	2698	44 5 53	2681	42 28 48	2664	40 51 20	2647
	JUPITER	E.	47 42 54	2765	46 7 40	2748	44 32 4	2731	42 56 5	2713
	SUN	E.	85 4 32	3051	83 35 22	3032	82 5 49	3014	80 35 54	2995

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.			P. L. of Diff.	XV^{h}.			P. L. of Diff.	XVIII^{h}.			P. L. of Diff.	XXI^{h}.			P. L. of Diff.
			°	′	″		°	′	″		°	′	″		°	′	″	
23	α Aquilæ	W.	82	5	42	3769	83	21	16	3767	84	36	53	3764	85	52	33	3761
	Fomalhaut	W.	56	25	57	3546	57	45	30	3533	59	5	18	3519	60	25	21	3506
	Aldebaran	E.	45	37	55	3224	44	12	14	3232	42	46	43	3242	41	21	24	3253
	MARS	E.	56	40	41	3255	55	15	37	3257	53	50	35	3258	52	25	34	3259
	Pollux	E.	87	32	14	3085	86	3	46	3086	84	35	19	3087	83	6	53	3087
24	α Aquilæ	W.	92	11	19	3758	93	27	5	3759	94	42	50	3760	95	58	34	3763
	Fomalhaut	W.	67	8	45	3456	68	29	58	3446	69	51	22	3438	71	12	55	3430
	α Pegasi	W.	44	48	35	3471	46	9	32	3450	47	30	52	3431	48	52	33	3413
	Aldebaran	E.	34	18	16	3321	32	54	29	3341	31	31	5	3364	30	8	7	3392
	MARS	E.	45	20	45	3262	43	55	49	3262	42	30	53	3262	41	5	57	3263
	Pollux	E.	75	44	44	3086	74	16	17	3084	72	47	48	3083	71	19	18	3082
25	α Aquilæ	W.	102	16	28	3781	103	31	50	3786	104	47	7	3792	106	2	17	3799
	Fomalhaut	W.	78	2	53	3393	79	25	17	3387	80	47	48	3380	82	10	27	3373
	α Pegasi	W.	55	45	37	3340	57	9	2	3326	58	32	43	3314	59	56	38	3302
	MARS	E.	34	1	21	3263	32	36	26	3264	31	11	32	3264	29	46	38	3265
	Pollux	E.	63	56	16	3070	62	27	30	3068	60	58	41	3064	59	29	47	3060
	Regulus	E.	100	48	58	3058	99	19	57	3055	97	50	52	3051	96	21	42	3046
	JUPITER	E.	101	55	53	3132	100	28	22	3126	99	0	46	3124	97	33	6	3119
26	Fomalhaut	W.	89	5	32	3343	90	28	54	3336	91	52	24	3330	93	16	1	3324
	α Pegasi	W.	66	59	37	3245	68	24	53	3235	69	50	21	3224	71	16	2	3212
	Pollux	E.	52	3	59	3036	50	34	31	3031	49	4	57	3025	47	35	15	3019
	Regulus	E.	88	54	24	3021	87	24	37	3014	85	54	41	3007	84	24	37	3000
	JUPITER	E.	90	13	16	3093	88	44	58	3086	87	16	31	3079	85	47	56	3072
27	Fomalhaut	W.	100	15	50	3294	101	40	9	3288	103	4	34	3282	104	29	6	3277
	α Pegasi	W.	78	27	47	3157	79	54	48	3146	81	22	2	3134	82	49	30	3123
	α Arietis	W.	35	21	15	3006	36	51	20	2994	38	21	40	2981	39	52	16	2969
	Pollux	E.	40	4	44	2984	38	34	11	2976	37	3	28	2969	35	32	36	2960
	Regulus	E.	76	51	54	2958	75	20	49	2950	73	49	33	2939	72	18	4	2929
	JUPITER	E.	78	22	38	3030	76	53	2	3020	75	23	14	3010	73	53	14	3000
	SUN	E.	113	43	23	3332	112	19	49	3323	110	56	4	3312	109	32	6	3300
28	α Pegasi	W.	90	10	24	3063	91	39	19	3051	93	8	29	3039	94	37	54	3026
	α Arietis	W.	47	29	23	2901	49	1	40	2887	50	34	15	2873	52	7	8	2859
	Regulus	E.	64	37	15	2872	63	4	20	2859	61	31	9	2847	59	57	42	2833
	JUPITER	E.	66	19	48	2942	64	48	22	2929	63	16	40	2916	61	44	41	2902
	SUN	E.	102	28	52	3239	101	3	29	3225	99	37	49	3211	98	11	53	3196
29	α Pegasi	W.	102	8	55	2962	103	39	55	2950	105	11	11	2937	106	42	43	2924
	α Arietis	W.	59	56	19	2782	61	31	10	2766	63	6	22	2750	64	41	56	2734
	Regulus	E.	52	5	55	2761	50	30	36	2746	48	54	57	2730	47	18	57	2714
	JUPITER	E.	54	0	18	2829	52	26	28	2814	50	52	18	2798	49	17	47	2781
	SUN	E.	90	57	43	3119	89	29	56	3102	88	1	49	3085	86	33	21	3068
30	α Arietis	W.	72	45	22	2646	74	23	14	2629	76	1	30	2611	77	40	10	2592
	Aldebaran	W.	41	40	42	2792	43	15	21	2764	44	50	36	2738	46	26	26	2712
	Regulus	E.	39	13	29	2629	37	35	14	2612	35	56	36	2594	34	17	33	2577
	JUPITER	E.	41	19	43	2695	39	42	57	2678	38	5	48	2660	36	28	15	2642
	SUN	E.	79	5	35	2977	77	34	53	2958	76	3	48	2939	74	32	18	2920

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	12 32 17.16	9.066	S. 3 29 9.9	−58.21	16 1.60	64.40	10 32.88	0.788
Frid.	2	12 35 54.92	9.080	3 52 25.8	58.11	16 1.87	64.45	10 51.63	0.774
Sat.	3	12 39 33.00	9.094	4 15 39.0	57.99	16 2.15	64.50	11 10.05	0.760
SUN.	4	12 43 11.45	9.110	4 38 49.3	−57.86	16 2.42	64.55	11 28.11	0.744
Mon.	5	12 46 50.28	9.126	5 1 56.2	57.71	16 2.69	64.60	11 45.78	0.728
Tues.	6	12 50 29.50	9.143	5 24 59.4	57.54	16 2.97	64.66	12 3.07	0.712
Wed.	7	12 54 9.12	9.160	5 47 58.4	−57.36	16 3.25	64.72	12 19.96	0.695
Thur.	8	12 57 49.17	9.178	6 10 52.9	57.16	16 3.53	64.79	12 36.42	0.677
Frid.	9	13 1 29.66	9.197	6 33 42.5	56.95	16 3.81	64.85	12 52.43	0.658
Sat.	10	13 5 10.61	9.216	6 56 26.7	−56.72	16 4.09	64.92	13 8.00	0.639
SUN.	11	13 8 52.03	9.236	7 19 5.2	56.48	16 4.37	65.00	13 23.09	0.619
Mon.	12	13 12 33.94	9.257	7 41 37.6	56.22	16 4.65	65.07	13 37.70	0.598
Tues.	13	13 16 16.35	9.278	8 4 3.6	−55.94	16 4.93	65.15	13 51.80	0.577
Wed.	14	13 19 59.28	9.300	8 26 22.6	55.64	16 5.21	65.23	14 5.38	0.555
Thur.	15	13 23 42.76	9.323	8 48 34.4	55.33	16 5.49	65.31	14 18.43	0.532
Frid.	16	13 27 26.79	9.347	9 10 38.6	−55.01	16 5.77	65.40	14 30.91	0.508
Sat.	17	13 31 11.40	9.371	9 32 34.8	54.67	16 6.05	65.49	14 42.83	0.484
SUN.	18	13 34 56.60	9.396	9 54 22.7	54.31	16 6.32	65.58	14 54.14	0.459
Mon.	19	13 38 42.42	9.422	10 16 1.9	−53.94	16 6.60	65.67	15 4.86	0.433
Tues.	20	13 42 28.86	9.449	10 37 31.9	53.55	16 6.87	65.76	15 14.94	0.406
Wed.	21	13 46 15.97	9.477	10 58 52.6	53.15	16 7.14	65.86	15 24.36	0.379
Thur.	22	13 50 3.74	9.505	11 20 3.4	−52.74	16 7.40	65.96	15 33.12	0.351
Frid.	23	13 53 52.20	9.534	11 41 4.0	52.31	16 7.67	66.06	15 41.19	0.322
Sat.	24	13 57 41.38	9.564	12 1 54.0	51.86	16 7.93	66.16	15 48.55	0.292
SUN.	25	14 1 31.27	9.595	12 22 33.1	−51.39	16 8.19	66.26	15 55.19	0.261
Mon.	26	14 5 21.91	9.626	12 43 0.9	50.91	16 8.44	66.37	16 1.09	0.230
Tues.	27	14 9 13.31	9.658	13 3 16.9	50.42	16 8.69	66.48	16 6.23	0.198
Wed.	28	14 13 5.48	9.690	13 23 20.8	−49.90	16 8.94	66.59	16 10.60	0.166
Thur.	29	14 16 58.44	9.723	13 43 12.2	49.37	16 9.19	66.70	16 14.19	0.133
Frid.	30	14 20 52.19	9.757	14 2 50.6	48.82	16 9.44	66.81	16 16.98	0.100
Sat.	31	14 24 46.76	9.791	14 22 15.6	48.26	16 9.68	66 92	16 18.97	0.066
SUN.	32	14 28 42.14	9.825	S. 14 41 26.8	−47.67	16 9.93	67.03	16 20.14	0.032

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^s.18$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	12 32 18.76	9.068	S. 3 29 20.2	−58.22	10 33.02	0.788	12 42 51.78
Frid.	2	12 35 56.56	9.082	3 52 36.3	58.12	10 51.77	0.774	12 46 48.33
Sat.	3	12 39 34.70	9.096	4 15 49.8	58.00	11 10.19	0.760	12 50 44.89
SUN.	4	12 43 13.19	9.112	4 39 0.4	−57.87	11 28.25	0.744	12 54 41.44
Mon.	5	12 46 52.07	9.128	5 2 7.6	57.72	11 45.93	0.728	12 58 37.99
Tues.	6	12 50 31.33	9.145	5 25 11.0	57.55	12 3.22	0.712	13 2 34.55
Wed.	7	12 54 11.00	9.162	5 48 10.2	−57.37	12 20.10	0.695	13 6 31.10
Thur.	8	12 57 51.10	9.180	6 11 5.0	57.17	12 36.56	0.677	13 10 27.66
Frid.	9	13 1 31.63	9.199	6 33 54.7	56.96	12 52.58	0.658	13 14 24.21
Sat.	10	13 5 12.63	9.218	6 56 39.2	−56.73	13 8.14	0.639	13 18 20.76
SUN.	11	13 8 54.09	9.238	7 19 17.8	56.48	13 23.23	0.619	13 22 17.32
Mon.	12	13 12 36.04	9.259	7 41 50.4	56.22	13 37.83	0.598	13 26 13.87
Tues.	13	13 16 18.49	9.280	8 4 16.5	−55.94	13 51.93	0.577	13 30 10.42
Wed.	14	13 20 1.47	9.302	8 26 35.7	55.65	14 5.51	0.555	13 34 6.98
Thur.	15	13 23 44.98	9.325	8 48 47.6	55.34	14 18.55	0.532	13 38 3.53
Frid.	16	13 27 29.05	9.349	9 10 52.0	−55.01	14 31.03	0.508	13 42 0.09
Sat.	17	13 31 13.70	9.373	9 32 48.3	54.67	14 42.94	0.484	13 45 56.64
SUN.	18	13 34 58.94	9.398	9 54 36.2	54.31	14 54.26	0.459	13 49 53.20
Mon.	19	13 38 44.79	9.424	10 16 15.4	−53.94	15 4.96	0.433	13 53 49.75
Tues.	20	13 42 31.27	9.450	10 37 45.5	53.56	15 15.04	0.406	13 57 46.30
Wed.	21	13 46 18.40	9.478	10 59 6.2	53.16	15 24.46	0.379	14 1 42.86
Thur.	22	13 50 6.21	9.506	11 20 17.0	−52.74	15 33.21	0.350	14 5 39.41
Frid.	23	13 53 54.70	9.535	11 41 17.6	52.31	15 41.27	0.321	14 9 35.97
Sat.	24	13 57 43.90	9.565	12 2 7.7	51.86	15 48.63	0.291	14 13 32.52
SUN.	25	14 1 33.82	9.596	12 22 46.7	−51.39	15 55.26	0.261	14 17 29.08
Mon.	26	14 5 24.48	9.627	12 43 14.4	50.91	16 1.15	0.230	14 21 25.63
Tues.	27	14 9 15.90	9.659	13 3 30.4	50.41	16 6.29	0.198	14 25 22.19
Wed.	28	14 13 8.10	9.691	13 23 34.2	−49.90	16 10.65	0.166	14 29 18.74
Thur.	29	14 17 1.07	9.724	13 43 25.5	49.37	16 14.23	0.133	14 33 15.30
Frid.	30	14 20 54.84	9.757	14 3 3.8	48.82	16 17.01	0.099	14 37 11.85
Sat.	31	14 24 49.42	9.791	14 22 28.7	48.25	16 18.98	0.065	14 41 8.41
SUN.	32	14 28 44.82	9.825	S.14 41 39.8	−47.66	16 20.14	0.031	14 45 4.96

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff for 1 Hour,
+9ˢ.8565.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	THE SUN'S Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	275	188 48 1.8	47 13.9	147.73	+ 0.28	0.0001798	−51.0	11 15 17.29
2	276	189 47 8.4	46 20.4	147.82	0.15	0.0000573	51.1	11 11 21.38
3	277	190 46 17.3	45 29.2	147.92	+ 0.02	9.9999344	51.3	11 7 25.47
4	278	191 45 28.4	44 40.2	148.01	− 0.11	9.9998109	−51.6	11 3 29.56
5	279	192 44 41.7	43 53.4	148.10	0.23	9.9996869	51.8	10 59 33.66
6	280	193 43 57.2	43 8.8	148.19	0.33	9.9995623	52.0	10 55 37.75
7	281	194 43 14.6	42 26.1	148.27	− 0.41	9.9994372	−52.2	10 51 41.84
8	282	195 42 34.2	41 45.6	148.36	0.46	9.9993116	52.4	10 47 45.93
9	283	196 41 55.8	41 7.1	148.44	0.48	9.9991857	52.6	10 43 50.02
10	284	197 41 19.2	40 30.4	148.52	− 0.46	9.9990593	−52.7	10 39 54.12
11	285	198 40 44.5	39 55.6	148.59	0.42	9.9989327	52.8	10 35 58.21
12	286	199 40 11.6	39 22.6	148.67	0.35	9.9988059	52.8	10 32 2.30
13	287	200 39 40.4	38 51.3	148.74	− 0.26	9.9986793	−52.7	10 28 6.39
14	288	201 39 11.0	38 21.8	148.81	0.15	9.9985528	52.6	10 24 10.49
15	289	202 38 43.3	37 53.9	148.88	− 0.03	9.9984268	52.4	10 20 14.58
16	290	203 38 17.4	37 27.9	148.96	+ 0.10	9.9983013	−52.1	10 16 18.67
17	291	204 37 53.4	37 3.8	149.03	0.24	9.9981766	51.8	10 12 22.76
18	292	205 37 31.0	36 41.3	149.11	0.36	9.9980526	51.4	10 8 26.85
19	293	206 37 10.5	36 20.7	149.19	+ 0.47	9.9979296	−51.0	10 4 30.94
20	294	207 36 51.8	36 1.8	149.26	0.55	9.9978077	50.5	10 0 35.04
21	295	208 36 35.0	35 44.9	149.34	0.61	9.9976870	50.0	9 56 39.13
22	296	209 36 20.3	35 30.1	149.42	+ 0.65	9.9975675	−49.5	9 52 43.22
23	297	210 36 7.4	35 17.1	149.51	0.65	9.9974493	49.0	9 48 47.31
24	298	211 35 56.8	35 6.3	149.59	0.63	9.9973324	48.5	9 44 51.40
25	299	212 35 48.1	34 57.5	149.68	+ 0.57	9.9972167	−48.0	9 40 55.49
26	300	213 35 41.6	34 50.8	149.77	0.49	9.9971021	47.5	9 36 59.58
27	301	214 35 37.3	34 46.4	149.86	0.39	9.9969887	47.0	9 33 3.67
28	302	215 35 35.1	34 44.1	149.95	+ 0.27	9.9968764	−46.6	9 29 7.76
29	303	216 35 35.2	34 44.0	150.05	+ 0.14	9.9967651	46.2	9 25 11.85
30	304	217 35 37.4	34 46.1	150.14	0.00	9.9966545	45.8	9 21 15.94
31	305	218 35 41.9	34 50.4	150.22	− 0.14	9.9965448	45.5	9 17 20.03
32	306	219 35 48.4	34 56.8	150.31	− 0.25	9.9964357	−45.3	9 13 24.12

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^d.0$.

Diff. for 1 Hour,
—$9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	15 41.3	15 49.1	57 27.9	+2.33	57 56.5	+2.41	19 52.8	2.20	23.9
2	15 57.0	16 4.9	58 25.6	2.42	58 54.6	2.39	20 44.9	2.14	24.9
3	16 12.6	16 19.9	59 22.9	2.30	59 49.8	2.15	21 35.8	2.11	25.9
4	16 26.7	16 32.7	60 14.6	+1.95	60 36.6	+1.69	22 26.6	2.12	26.9
5	16 37.7	16 41.6	60 55.1	1.37	61 9.5	1.00	23 18.2	2.19	27.9
6	16 44.3	16 45.6	61 19.2	+0.60	61 24.0	+0.18	6		28.9
7	16 45.4	16 44.0	61 23.6	−0.24	61 18.2	−0.65	0 11.9	2.30	0.6
8	16 41.2	16 37.2	61 7.9	1.04	60 53.3	1.38	1 8.6	2.43	1.6
9	16 32.1	16 26.2	60 34.7	1.69	60 12.8	1.93	2 8.5	2.55	2.6
10	16 19.6	16 12.4	59 48.5	−2.10	59 22.3	−2.23	3 10.5	2.61	3.6
11	16 5.0	15 57.4	58 55.0	2.30	58 27.1	2.32	4 12.7	2.56	4.6
12	15 49.9	15 42.4	57 59.4	2.29	57 32.2	2.23	5 12.6	2.41	5.6
13	15 35.3	15 28.5	57 6.0	−2.13	56 41.1	−2.01	6 8.2	2.22	6.6
14	15 22.2	15 16.3	56 17.8	1.87	55 56.2	1.73	6 59.2	2.03	7.6
15	15 10.9	15 6.0	55 36.4	1.57	55 18.5	1.41	7 45.7	1.86	8.6
16	15 1.7	14 57.9	55 2.6	−1.25	54 48.5	−1.10	8 28.8	1.74	9.6
17	14 54.6	14 51.7	54 36.3	0.94	54 25.9	0.80	9 9.6	1.67	10.6
18	14 49.4	14 47.4	54 17.2	0.65	54 10.2	0.53	9 49.2	1.64	11.6
19	14 45.9	14 44.8	54 4.6	−0.40	54 0.6	−0.28	10 28.6	1.65	12.6
20	14 44.1	14 43.8	53 58.0	−0.16	53 56.8	−0.05	11 8.8	1.71	13.6
21	14 43.8	14 44.2	53 56.8	+0.06	53 58.2	+0.17	11 50.8	1.80	14.6
22	14 44.9	14 45.9	54 0.8	+0.27	54 4.7	+0.38	12 35.3	1.91	15.6
23	14 47.4	14 49.2	54 10.0	0.50	54 16.7	0.61	13 22.6	2.03	16.6
24	14 51.4	14 54.0	54 24.7	0.73	54 34.3	0.86	14 12.8	2.14	17.6
25	14 57.0	15 0.5	54 45.4	+1.00	54 58.2	+1.13	15 5.2	2.21	18.6
26	15 4.4	15 8.8	55 12.6	1.27	55 28.7	1.42	15 58.7	2.23	19.6
27	15 13.7	15 19.0	55 46.6	1.56	56 6.2	1.70	16 52.1	2.20	20.6
28	15 24.8	15 31.0	56 27.5	+1.84	56 50.3	+1.96	17 44.3	2.14	21.6
29	15 37.7	15 44.6	57 14.6	2.07	57 40.0	2.15	18 34.9	2.08	22.6
30	15 51.7	15 59.0	58 6.2	2.20	58 32.9	2.23	19 24.3	2.04	23.6
31	16 6.3	16 13.4	58 59.7	2.20	59 25.8	2.13	20 13.2	2.04	24.6
32	16 20.2	16 26.5	59 50.9	+2.01	60 14.0	+1.83	21 2.8	2.10	25.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.
	THURSDAY 1.					SATURDAY 3.		
	h m s	s	° ′ ″	″		h m s	s	° ′ ″
0	7 53 6.82	2.3265	N.23 21 57.0	8.847	0	9 42 20.06	2.2269	N.13 49 0.2
1	7 55 26.35	2.3246	23 13 1.9	8.988	1	9 44 33.63	2.2253	13 34 18.1
2	7 57 45.77	2.3227	23 3 58.4	9.129	2	9 46 47.10	2.2237	13 19 30.3
3	8 0 5.07	2.3207	22 54 46.4	9.269	3	9 49 0.48	2.2222	13 4 37.0
4	8 2 24.25	2.3186	22 45 26.1	9.408	4	9 51 13.77	2.2208	12 49 38.2
5	8 4 43.30	2.3165	22 35 57.5	9.547	5	9 53 26.98	2.2195	12 34 34.0
6	8 7 2.23	2.3145	22 26 20.5	9.685	6	9 55 40.11	2.2182	12 19 24.5
7	8 9 21.04	2.3124	22 16 35.3	9.822	7	9 57 53.16	2.2169	12 4 9.8
8	8 11 39.72	2.3102	22 6 41.9	9.957	8	10 0 6.13	2.2156	11 48 49.9
9	8 13 58.27	2.3081	21 56 40.4	10.092	9	10 2 19.03	2.2144	11 33 25.0
10	8 16 16.69	2.3059	21 46 30.8	10.227	10	10 4 31.86	2.2132	11 17 55.1
11	8 18 34.98	2.3038	21 36 13.1	10.362	11	10 6 44.62	2.2121	11 2 20.3
12	8 20 53.14	2.3016	21 25 47.3	10.496	12	10 8 57.31	2.2111	10 46 40.7
13	8 23 11.17	2.2993	21 15 13.6	10.628	13	10 11 9.95	2.2102	10 30 56.4
14	8 25 29.06	2.2971	21 4 32.0	10.759	14	10 13 22.53	2.2092	10 15 7.4
15	8 27 46.82	2.2949	20 53 42.5	10.890	15	10 15 35.05	2.2083	9 59 13.9
16	8 30 4.45	2.2928	20 42 45.2	11.020	16	10 17 47.52	2.2075	9 43 16.0
17	8 32 21.95	2.2906	20 31 40.1	11.150	17	10 19 59.95	2.2068	9 27 13.7
18	8 34 39.31	2.2883	20 20 27.2	11.278	18	10 22 12.34	2.2062	9 11 7.1
19	8 36 56.54	2.2860	20 9 6.7	11.405	19	10 24 24.69	2.2055	8 54 56.3
20	8 39 13.63	2.2837	19 57 38.6	11.532	20	10 26 37.00	2.2049	8 38 41.4
21	8 41 30.59	2.2815	19 46 2.9	11.657	21	10 28 49.28	2.2044	8 22 22.6
22	8 43 47.41	2.2792	19 34 19.7	11.782	22	10 31 1.53	2.2040	8 5 59.9
23	8 46 4.10	2.2770	N.19 22 29.1	11.906	23	10 33 13.76	2.2037	N. 7 49 33.3
	FRIDAY 2.					SUNDAY 4.		
0	8 48 20.65	2.2747	N.19 10 31.0	12.029	0	10 35 25.97	2.2033	N. 7 33 3.1
1	8 50 37.07	2.2725	18 58 25.6	12.151	1	10 37 38.16	2.2031	7 16 29.3
2	8 52 53.35	2.2703	18 46 12.9	12.272	2	10 39 50.34	2.2030	6 59 51.9
3	8 55 9.50	2.2681	18 33 53.0	12.391	3	10 42 2.52	2.2029	6 43 11.1
4	8 57 25.52	2.2659	18 21 26.0	12.510	4	10 44 14.69	2.2029	6 26 27.0
5	8 59 41.41	2.2637	18 8 51.8	12.628	5	10 46 26.87	2.2030	6 9 39.7
6	9 1 57.17	2.2616	17 56 10.6	12.745	6	10 48 39.05	2.2031	5 52 49.2
7	9 4 12.80	2.2594	17 43 22.4	12.861	7	10 50 51.24	2.2032	5 35 55.7
8	9 6 28.30	2.2573	17 30 27.3	12.976	8	10 53 3.44	2.2035	5 18 59.3
9	9 8 43.67	2.2552	17 17 25.3	13.090	9	10 55 15.66	2.2038	5 2 0.2
10	9 10 58.92	2.2531	17 4 16.5	13.202	10	10 57 27.90	2.2042	4 44 58.3
11	9 13 14.04	2.2510	16 51 1.1	13.313	11	10 59 40.17	2.2047	4 27 53.8
12	9 15 29.04	2.2489	16 37 39.0	13.423	12	11 1 52.46	2.2052	4 10 46.8
13	9 17 43.91	2.2469	16 24 10.3	13.533	13	11 4 4.79	2.2059	3 53 37.4
14	9 19 58.67	2.2450	16 10 35.1	13.641	14	11 6 17.16	2.2066	3 36 25.8
15	9 22 13.31	2.2431	15 56 53.4	13.747	15	11 8 29.58	2.2073	3 19 12.0
16	9 24 27.84	2.2412	15 43 5.4	13.852	16	11 10 42.04	2.2082	3 1 56.1
17	9 26 42.25	2.2392	15 29 11.1	13.957	17	11 12 54.56	2.2092	2 44 38.2
18	9 28 56.54	2.2373	15 15 10.5	14.061	18	11 15 7.14	2.2102	2 27 18.5
19	9 31 10.72	2.2355	15 1 3.8	14.163	19	11 17 19.78	2.2112	2 9 57.1
20	9 33 24.80	2.2337	14 46 51.0	14.264	20	11 19 32.49	2.2123	1 52 34.0
21	9 35 38.77	2.2320	14 32 32.1	14.364	21	11 21 45.26	2.2135	1 35 9.4
22	9 37 52.64	2.2302	14 18 7.3	14.462	22	11 23 58.11	2.2149	1 17 43.4
23	9 40 6.40	2.2285	14 3 36.6	14.559	23	11 26 11.05	2.2163	1 0 16.1
24	9 42 20.06	2.2269	N.13 49 0.2	14.654	24	11 28 24.07	2.2177	N. 0 42 47.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute	Declination.	Diff. for 1 Minute.
	MONDAY 5.					**WEDNESDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	11 28 24.07	2.2177	N. 0 42 47.7	17.482	0	13 17 58.03	2.3739	S. 12 59 16.1	15.955
1	11 30 37.18	2.2193	0 25 18.2	17.499	1	13 20 20.61	2.3787	13 15 10.9	15.870
2	11 32 50.39	2.2209	N. 0 7 47.8	17.514	2	13 22 43.48	2.3836	13 31 0.5	15.783
3	11 35 3.69	2.2225	S. 0 9 43.5	17.527	3	13 25 6.64	2.3884	13 46 44.9	15.695
4	11 37 17.09	2.2243	0 27 15.5	17.538	4	13 27 30.09	2.3932	14 2 23.9	15.603
5	11 39 30.61	2.22[illegible]2	0 44 48.1	17.547	5	13 29 53.83	2.3981	14 17 57.3	15.509
6	11 41 44.24	2.2282	1 2 21.2	17.554	6	13 32 17.86	2.4030	14 33 25.0	15.414
7	11 43 57.99	2.2302	1 19 54.6	17.559	7	13 34 42.19	2.4080	14 48 47.0	15.317
8	11 46 11.86	2.2322	1 37 28.3	17.562	8	13 37 6.82	2.4130	15 4 3.0	15.217
9	11 48 25.86	2.2344	1 55 2.1	17.563	9	13 39 31.75	2.4180	15 19 13.0	15.116
10	11 50 39.99	2.2367	2 12 35.9	17.562	10	13 41 56.98	2.4231	15 34 16.9	15.012
11	11 52 54.26	2.2389	2 30 9.5	17.558	11	13 44 22.52	2.4282	15 49 14.4	14.905
12	11 55 8.66	2.2413	2 47 42.9	17.553	12	13 46 48.36	2.4332	16 4 5.5	14.797
13	11 57 23.21	2.2437	3 5 15.9	17.546	13	13 49 14.50	2.4383	16 18 50.0	14.687
14	11 59 37.91	2.2463	3 22 48.4	17.537	14	13 51 40.95	2.4434	16 33 27.9	14.575
15	12 1 52.77	2.2490	3 40 20.4	17.527	15	13 54 7.71	2.4486	16 47 59.0	14.460
16	12 4 7.79	2.2517	3 57 51.6	17.513	16	13 56 34.78	2.4537	17 2 23.1	14.343
17	12 6 22.97	2.2544	4 15 21.9	17.498	17	13 59 2.15	2.4588	17 16 40.2	14.226
18	12 8 38.32	2.2573	4 32 51.3	17.480	18	14 1 29.83	2.4639	17 30 50.2	14.106
19	12 10 53.85	2.2603	4 50 19.5	17.460	19	14 3 57.82	2.4691	17 44 52.9	13.983
20	12 13 9.55	2.2633	5 7 46.5	17.438	20	14 6 26.12	2.4742	17 58 48.1	13.858
21	12 15 25.43	2.2663	5 25 12.1	17.414	21	14 8 54.72	2.4793	18 12 35.8	13.731
22	12 17 41.50	2.2694	5 42 36.2	17.388	22	14 11 23.63	2.4844	18 26 15.8	13.602
23	12 19 57.76	2.2726	S. 5 59 58.7	17.361	23	14 13 52.85	2.4896	S. 18 39 48.1	13.472
	TUESDAY 6.					**THURSDAY 8.**			
0	12 22 14.21	2.2758	S. 6 17 19.5	17.331	0	14 16 22.38	2.4947	S. 18 53 12.5	13.340
1	12 24 30.86	2.2792	6 34 38.4	17.298	1	14 18 52.21	2.4997	19 6 28.9	13.206
2	12 26 47.72	2.2827	6 51 55.3	17.263	2	14 21 22.34	2.5048	19 19 37.2	13.069
3	12 29 4.79	2.2862	7 9 10.0	17.227	3	14 23 52.78	2.5098	19 32 37.2	12.931
4	12 31 22.07	2.2897	7 26 22.5	17.188	4	14 26 23.52	2.5147	19 45 28.9	12.792
5	12 33 39.56	2.2933	7 43 32.6	17.147	5	14 28 54.56	2.5197	19 58 12.2	12.650
6	12 35 57.27	2.2970	8 0 40.1	17.103	6	14 31 25.89	2.5247	20 10 46.9	12.506
7	12 38 15.20	2.3008	8 17 45.0	17.058	7	14 33 57.52	2.5296	20 23 12.9	12.361
8	12 40 33.37	2.3047	8 34 47.1	17.012	8	14 36 29.44	2.5344	20 35 30.2	12.214
9	12 42 51.77	2.3086	8 51 46.4	16.962	9	14 39 1.65	2.5393	20 47 38.6	12.065
10	12 45 10.40	2.3126	9 8 42.6	16.910	10	14 41 34.15	2.5441	20 59 38.0	11.914
11	12 47 29.28	2.3167	9 25 35.6	16.856	11	14 44 6.94	2.5488	21 11 28.3	11.762
12	12 49 48.40	2.3207	9 42 25.3	16.800	12	14 46 40.01	2.5535	21 23 9.4	11.608
13	12 52 7.76	2.3249	9 59 11.6	16.742	13	14 49 13.36	2.5581	21 34 41.2	11.452
14	12 54 27.38	2.3291	10 15 54.3	16.681	14	14 51 46.98	2.5627	21 46 3.6	11.295
15	12 56 47.25	2.3333	10 32 33.3	16.618	15	14 54 20.88	2.5672	21 57 16.6	11.137
16	12 59 7.37	2.3376	10 49 8.5	16.553	16	14 56 55.05	2.5716	22 8 20.0	10.976
17	13 1 27.76	2.3420	11 5 39.7	16.486	17	14 59 29.48	2.5759	22 19 13.7	10.814
18	13 3 48.41	2.3464	11 22 6.8	16.417	18	15 2 4.16	2.5802	22 29 57.7	10.651
19	13 6 9.33	2.3509	11 38 29.7	16.345	19	15 4 39.10	2.5845	22 40 31.8	10.486
20	13 8 30.52	2.3554	11 54 48.2	16.271	20	15 7 14.30	2.5887	22 50 56.0	10.320
21	13 10 51.98	2.3600	12 11 2.2	16.195	21	15 9 49.75	2.5928	23 1 10.2	10.152
22	13 13 13.72	2.3646	12 27 11.6	16.117	22	15 12 25.44	2.5968	23 11 14.3	9.983
23	13 15 35.74	2.3692	12 43 16.3	16.037	23	15 15 1.37	2.6007	23 21 8.2	9.812
24	13 17 58.03	2.3739	S. 12 59 16.1	15.955	24	15 17 37.52	2.6044	S. 23 30 51.8	9.640

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 9.			
	h m s	s	° ′ ″	″
0	15 17 37.52	2.6044	S.23 30 51.8	9.640
1	15 20 13.90	2.6081	23 40 25.0	9.468
2	15 22 50.50	2.6118	23 49 47.9	9.294
3	15 25 27.32	2.6154	23 59 0.3	9.118
4	15 28 4.35	2.6187	24 8 2.1	8.942
5	15 30 41.57	2.6219	24 16 53.3	8.764
6	15 33 18.98	2.6251	24 25 33.8	8.585
7	15 35 56.58	2.6282	24 34 3.5	8.405
8	15 38 34.37	2.6312	24 42 22.4	8.225
9	15 41 12.33	2.6340	24 50 30.5	8.043
10	15 43 50.45	2.6368	24 58 27.6	7.860
11	15 46 28.74	2.6394	25 6 13.7	7.676
12	15 49 7.18	2.6418	25 13 48.7	7.491
13	15 51 45.76	2.6442	25 21 12.6	7.306
14	15 54 24.48	2.6464	25 28 25.4	7.120
15	15 57 3.33	2.6485	25 35 27.0	6.933
16	15 59 42.30	2.6504	25 42 17.4	6.746
17	16 2 21.38	2.6523	25 48 56.5	6.557
18	16 5 0.57	2.6540	25 55 24.3	6.368
19	16 7 39.86	2.6555	26 1 40.7	6.179
20	16 10 19.23	2.6567	26 7 45.8	5.990
21	16 12 58.67	2.6579	26 13 39.5	5.799
22	16 15 38.18	2.6591	26 19 21.7	5.607
23	16 18 17.76	2.6601	S.26 24 52.4	5.416
	SATURDAY 10.			
0	16 20 57.39	2.6608	S.26 30 11.6	5.224
1	16 23 37.06	2.6614	26 35 19.3	5.032
2	16 26 16.76	2.6619	26 40 15.5	4.840
3	16 28 56.49	2.6622	26 45 0.1	4.647
4	16 31 36.23	2.6624	26 49 33.2	4.455
5	16 34 15.98	2.6625	26 53 54.7	4.262
6	16 36 55.73	2.6624	26 58 4.7	4.070
7	16 39 35.46	2.6620	27 2 3.1	3.877
8	16 42 15.17	2.6615	27 5 49.9	3.683
9	16 44 54.84	2.6608	27 9 25.1	3.490
10	16 47 34.47	2.6601	27 12 48.7	3.297
11	16 50 14.05	2.6591	27 16 0.7	3.104
12	16 52 53.56	2.6579	27 19 1.2	2.912
13	16 55 33.00	2.6567	27 21 50.1	2.719
14	16 58 12.36	2.6553	27 24 27.5	2.527
15	17 0 51.64	2.6537	27 26 53.3	2.334
16	17 3 30.81	2.6519	27 29 7.6	2.143
17	17 6 9.87	2.6500	27 31 10.5	1.952
18	17 8 48.81	2.6479	27 33 1.9	1.761
19	17 11 27.62	2.6457	27 34 41.8	1.570
20	17 14 6.29	2.6433	27 36 10.3	1.381
21	17 16 44.81	2.6408	27 37 27.5	1.192
22	17 19 23.18	2.6381	27 38 33.3	1.003
23	17 22 1.38	2.6352	27 39 27.8	0.814
24	17 24 39.40	2.6322	S.27 40 11.0	0.626

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 11.			
	h m s	s	° ′ ″	″
0	17 24 39.40	2.6322	S.27 40 11.0	0.626
1	17 27 17.24	2.6290	27 40 42.9	0.438
2	17 29 54.88	2.6257	27 41 3.6	0.252
3	17 32 32.32	2.6223	27 41 13.2	− 0.067
4	17 35 9 55	2.6187	27 41 11.6	+ 0.118
5	17 37 46.56	2.6148	27 40 59.0	0.303
6	17 40 23.33	2.6108	27 40 35.3	0.487
7	17 42 59.86	2.6068	27 40 0.6	0.669
8	17 45 36.15	2.6027	27 39 15.0	0.850
9	17 48 12.19	2.5984	27 38 18.6	1.031
10	17 50 47.96	2.5939	27 37 11.3	1.212
11	17 53 23.46	2.5893	27 35 53.2	1.390
12	17 55 58.68	2.5847	27 34 24.5	1.568
13	17 58 33.62	2.5798	27 32 45.1	1.745
14	18 1 8.26	2.5747	27 30 55.1	1.921
15	18 3 42.59	2.5696	27 28 54.6	2.095
16	18 6 16.61	2.5644	27 26 43.7	2.269
17	18 8 50.32	2.5592	27 24 22.4	2.442
18	18 11 23.71	2.5538	27 21 50.7	2.613
19	18 13 56.77	2.5482	27 19 8.8	2.783
20	18 16 29.49	2.5425	27 16 16.7	2.952
21	18 19 1.87	2.5367	27 13 14.5	3.120
22	18 21 33.90	2.5309	27 10 2.3	3.287
23	18 24 5.58	2.5249	S.27 6 40.1	3.452
	MONDAY 12.			
0	18 26 36.89	2.5188	S.27 3 8.0	3.617
1	18 29 7.83	2.5127	26 59 26.1	3.779
2	18 31 38.41	2.5065	26 55 34.5	3.940
3	18 34 8.61	2.5002	26 51 33.3	4.100
4	18 36 38.43	2.4937	26 47 22.5	4.259
5	18 39 7.85	2.4871	26 43 2.2	4.417
6	18 41 36.88	2.4805	26 38 32.5	4.573
7	18 44 5.51	2.4738	26 33 53.5	4.728
8	18 46 33.74	2.4671	26 29 5.2	4.881
9	18 49 1.57	2.4604	26 24 7.8	5.032
10	18 51 28.99	2.4535	26 19 1.3	5.183
11	18 53 55.99	2.4465	26 13 45.8	5.332
12	18 56 22.57	2.4395	26 8 21.5	5.479
13	18 58 48.73	2.4325	26 2 48.4	5.625
14	19 1 14.47	2.4254	25 57 6.5	5.771
15	19 3 39.78	2.4183	25 51 15.9	5.914
16	19 6 4.66	2.4111	25 45 16.8	6.056
17	19 8 29.11	2.4038	25 39 9.2	6.196
18	19 10 53.12	2.3966	25 32 53.3	6.334
19	19 13 16.70	2.3893	25 26 29.1	6.472
20	19 15 39.83	2.3819	25 19 56.7	6.608
21	19 18 2.52	2.3745	25 13 16.1	6.743
22	19 20 24.77	2.3671	25 6 27.5	6.876
23	19 22 46.58	2.3597	24 59 31.0	7.007
24	19 25 7.94	2.3522	S.24 52 26.6	7.137

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	19	25	7.94	2.3522	S.24	52	26.6	7.137
1	19	27	28.85	2.3447	24	45	14.5	7.266
2	19	29	49.31	2.3373	24	37	54.7	7.393
3	19	32	9.33	2.3298	24	30	27.4	7.518
4	19	34	28.89	2.3222	24	22	52.6	7.643
5	19	36	48.00	2.3147	24	15	10.3	7.766
6	19	39	6.66	2.3072	24	7	20.7	7.887
7	19	41	24.87	2.2997	23	59	23.9	8.006
8	19	43	42.62	2.2921	23	51	20.0	8.124
9	19	45	59.92	2.2846	23	43	9.0	8.241
10	19	48	16.77	2.2771	23	34	51.1	8.356
11	19	50	33.17	2.2695	23	26	26.3	8.470
12	19	52	49.11	2.2619	23	17	54.7	8.582
13	19	55	4.60	2.2545	23	9	16.4	8.693
14	19	57	19.65	2.2471	23	0	31.5	8.802
15	19	59	34.25	2.2396	22	51	40.1	8.910
16	20	1	48.40	2.2321	22	42	42.3	9.017
17	20	4	2.10	2.2246	22	33	38.1	9.122
18	20	6	15.35	2.2172	22	24	27.6	9.226
19	20	8	28.16	2.2098	22	15	11.0	9.328
20	20	10	40.53	2.2025	22	5	48.3	9.429
21	20	12	52.46	2.1952	21	56	19.5	9.529
22	20	15	3.95	2.1878	21	46	44.8	9.627
23	20	17	15.00	2.1806	S.21	37	4.3	9.723

WEDNESDAY 14.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	20	19	25.62	2.1733	S.21	27	18.1	9.818
1	20	21	35.80	2.1661	21	17	26.2	9.912
2	20	23	45.55	2.1590	21	7	28.7	10.005
3	20	25	54.88	2.1519	20	57	25.6	10.097
4	20	28	3.78	2.1448	20	47	17.1	10.186
5	20	30	12.25	2.1377	20	37	3.3	10.273
6	20	32	20.30	2.1307	20	26	44.3	10.360
7	20	34	27.93	2.1237	20	16	20.1	10.447
8	20	36	35.14	2.1167	20	5	50.7	10.532
9	20	38	41.94	2.1099	19	55	16.3	10.615
10	20	40	48.33	2.1031	19	44	36.9	10.697
11	20	42	54.31	2.0963	19	33	52.7	10.777
12	20	44	59.89	2.0896	19	23	3.7	10.857
13	20	47	5.06	2.0829	19	12	9.9	10.935
14	20	49	9.84	2.0763	19	1	11.5	11.011
15	20	51	14.22	2.0697	18	50	8.6	11.086
16	20	53	18.21	2.0632	18	39	1.2	11.161
17	20	55	21.81	2.0568	18	27	49.3	11.234
18	20	57	25.03	2.0504	18	16	33.1	11.306
19	20	59	27.86	2.0441	18	5	12.6	11.377
20	21	1	30.32	2.0378	17	53	47.9	11.446
21	21	3	32.40	2.0316	17	42	19.1	11.514
22	21	5	34.11	2.0255	17	30	46.2	11.582
23	21	7	35.46	2.0194	17	19	9.3	11.647
24	21	9	36.44	2.0133	S.17	7	28.5	11.712

THURSDAY 15.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	21	9	36.44	2.0133	S.17	7	28.5	11.712
1	21	11	37.06	2.0074	16	55	43.9	11.776
2	21	13	37.33	2.0015	16	43	55.4	11.839
3	21	15	37.24	1.9956	16	32	3.2	11.900
4	21	17	36.80	1.9898	16	20	7.4	11.960
5	21	19	36.02	1.9842	16	8	8.0	12.019
6	21	21	34.90	1.9785	15	56	5.1	12.077
7	21	23	33.44	1.9729	15	43	58.8	12.134
8	21	25	31.65	1.9674	15	31	49.1	12.190
9	21	27	29.53	1.9620	15	19	36.0	12.245
10	21	29	27.09	1.9567	15	7	19.7	12.299
11	21	31	24.33	1.9514	14	55	0.2	12.352
12	21	33	21.25	1.9461	14	42	37.5	12.403
13	21	35	17.86	1.9409	14	30	11.8	12.453
14	21	37	14.16	1.9358	14	17	43.1	12.502
15	21	39	10.16	1.9308	14	5	11.5	12.551
16	21	41	5.86	1.9259	13	52	37.0	12.598
17	21	43	1.27	1.9210	13	39	59.7	12.645
18	21	44	56.38	1.9162	13	27	19.6	12.691
19	21	46	51.21	1.9115	13	14	36.8	12.735
20	21	48	45.76	1.9068	13	1	51.4	12.778
21	21	50	40.02	1.9021	12	49	3.4	12.821
22	21	52	34.01	1.8976	12	36	12.9	12.862
23	21	54	27.74	1.8932	S.12	23	19.9	12.903

FRIDAY 16.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.
	h	m	s	s	°	′	″	″
0	21	56	21.20	1.8888	S.12	10	24.5	12.942
1	21	58	14.40	1.8846	11	57	26.8	12.981
2	22	0	7.35	1.8804	11	44	26.8	13.019
3	22	2	0.04	1.8761	11	31	24.5	13.057
4	22	3	52.48	1.8720	11	18	20.0	13.093
5	22	5	44.68	1.8681	11	5	13.4	13.127
6	22	7	36.65	1.8642	10	52	4.8	13.160
7	22	9	28.38	1.8603	10	38	54.2	13.193
8	22	11	19.88	1.8565	10	25	41.6	13.226
9	22	13	11.16	1.8527	10	12	27.0	13.258
10	22	15	2.21	1.8491	9	59	10.6	13.288
11	22	16	53.05	1.8455	9	45	52.4	13.317
12	22	18	43.67	1.8419	9	32	32.5	13.346
13	22	20	34.08	1.8385	9	19	10.9	13.374
14	22	22	24.29	1.8352	9	5	47.6	13.402
15	22	24	14.31	1.8320	8	52	22.7	13.428
16	22	26	4.13	1.8288	8	38	56.2	13.453
17	22	27	53.76	1.8257	8	25	28.3	13.478
18	22	29	43.21	1.8227	8	11	58.9	13.502
19	22	31	32.48	1.8197	7	58	28.1	13.524
20	22	33	21.57	1.8167	7	44	56.0	13.546
21	22	35	10.48	1.8138	7	31	22.6	13.567
22	22	36	59.22	1.8110	7	17	47.9	13.587
23	22	38	47.80	1.8084	7	4	12.1	13.607
24	22	40	36.23	1.8058	S. 6	50	35.1	13.626

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 17.					MONDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 40 36.23	1.8058	S. 6 50 35.1	13.626	0	0 5 36.38	1.7626	N. 4 10 30.0	13.632
1	22 42 24.50	1.8032	6 36 57.0	13.644	1	0 7 22.16	1.7633	4 24 7.4	13.615
2	22 44 12.62	1.8007	6 23 17.8	13.662	2	0 9 7.98	1.7641	4 37 43.8	13.597
3	22 46 0.59	1.7983	6 9 37.6	13.678	3	0 10 53.85	1.7650	4 51 19.1	13.578
4	22 47 48.42	1.7960	5 55 56.4	13.693	4	0 12 39.78	1.7659	5 4 53.2	13.557
5	22 49 36.11	1.7937	5 42 14.4	13.708	5	0 14 25.76	1.7668	5 18 26.0	13.536
6	22 51 23.66	1.7914	5 28 31.5	13.722	6	0 16 11.80	1.7679	5 31 57.5	13.514
7	22 53 11.08	1.7893	5 14 47.8	13.735	7	0 17 57.91	1.7691	5 45 27.7	13.492
8	22 54 58.38	1.7874	5 1 3.3	13.748	8	0 19 44.09	1.7703	5 58 56.5	13.469
9	22 56 45.57	1.7855	4 47 18.0	13.760	9	0 21 30.34	1.7715	6 12 24.0	13.446
10	22 58 32.64	1.7835	4 33 32.1	13.770	10	0 23 16.67	1.7728	6 25 50.0	13.421
11	23 0 19.59	1.7816	4 19 45.6	13.781	11	0 25 3.08	1.7742	6 39 14.5	13.395
12	23 2 6.43	1.7798	4 5 58.4	13.791	12	0 26 49.58	1.7757	6 52 37.4	13.369
13	23 3 53.17	1.7782	3 52 10.7	13.799	13	0 28 36.16	1.7772	7 5 58.8	13.342
14	23 5 39.81	1.7766	3 38 22.6	13.806	14	0 30 22.84	1.7787	7 19 18.5	13.314
15	23 7 26.36	1.7751	3 24 34.0	13.813	15	0 32 9.61	1.7803	7 32 36.5	13.286
16	23 9 12.82	1.7736	3 10 45.0	13.819	16	0 33 56.48	1.7820	7 45 52.8	13.257
17	23 10 59.19	1.7721	2 56 55.7	13.825	17	0 35 43.45	1.7838	7 59 7.3	13.227
18	23 12 45.47	1.7708	2 43 6.0	13.831	18	0 37 30.53	1.7856	8 12 20.1	13.197
19	23 14 31.68	1.7696	2 29 16.0	13.834	19	0 39 17.72	1.7874	8 25 31.0	13.166
20	23 16 17.82	1.7684	2 15 25.9	13.837	20	0 41 5.02	1.7893	8 38 40.0	13.133
21	23 18 3.88	1.7672	2 1 35.6	13.840	21	0 42 52.44	1.7913	8 51 47.0	13.100
22	23 19 49.88	1.7662	1 47 45.1	13.842	22	0 44 39.98	1.7934	9 4 52.0	13.067
23	23 21 35.82	1.7652	S. 1 33 54.5	13.843	23	0 46 27.65	1.7955	N. 9 17 55.0	13.032
	SUNDAY 18.					TUESDAY 20.			
0	23 23 21.71	1.7643	S. 1 20 3.9	13.843	0	0 48 15.44	1.7976	N. 9 30 55.9	12.997
1	23 25 7.54	1.7634	1 6 13.3	13.843	1	0 50 3.36	1.7998	9 43 54.6	12.961
2	23 26 53.32	1.7627	0 52 22.8	13.842	2	0 51 51.42	1.8021	9 56 51.2	12.925
3	23 28 39.06	1.7620	0 38 32.3	13.841	3	0 53 39.61	1.8043	10 9 45.6	12.887
4	23 30 24.76	1.7613	0 24 41.9	13.838	4	0 55 27.94	1.8067	10 22 37.7	12.848
5	23 32 10.42	1.7607	S. 0 10 51.7	13.834	5	0 57 16.42	1.8092	10 35 27.4	12.808
6	23 33 56.04	1.7602	N. 0 2 58.2	13.830	6	0 59 5.05	1.8117	10 48 14.7	12.768
7	23 35 41.64	1.7598	0 16 47.9	13.826	7	1 0 53.83	1.8142	11 0 59.6	12.728
8	23 37 27.22	1.7594	0 30 37.3	13.820	8	1 2 42.76	1.8168	11 13 42.0	12.687
9	23 39 12.77	1.7591	0 44 26.3	13.814	9	1 4 31.85	1.8195	11 26 22.0	12.645
10	23 40 58.31	1.7589	0 58 15.0	13.807	10	1 6 21.10	1.8222	11 38 59.4	12.601
11	23 42 43.84	1.7587	1 12 3.2	13.799	11	1 8 10.52	1.8250	11 51 34.1	12.557
12	23 44 29.35	1.7585	1 25 50.9	13.791	12	1 10 0.10	1.8278	12 4 6.2	12.512
13	23 46 14.86	1.7586	1 39 38.1	13.782	13	1 11 49.86	1.8307	12 16 35.6	12.467
14	23 48 0.38	1.7587	1 53 24.7	13.772	14	1 13 39.79	1.8336	12 29 2.2	12.420
15	23 49 45.90	1.7587	2 7 10.8	13.762	15	1 15 29.89	1.8365	12 41 26.0	12.373
16	23 51 31.42	1.7589	2 20 56.2	13.750	16	1 17 20.17	1.8396	12 53 47.0	12.325
17	23 53 16.96	1.7591	2 34 40.8	13.737	17	1 19 10.64	1.8427	13 6 5.0	12.276
18	23 55 2.51	1.7593	2 48 24.7	13.725	18	1 21 1.29	1.8458	13 18 20.1	12.227
19	23 56 48.08	1.7597	3 2 7.8	13.712	19	1 22 52.13	1.8489	13 30 32.2	12.176
20	23 58 33.68	1.7601	3 15 50.1	13.697	20	1 24 43.16	1.8521	13 42 41.2	12.124
21	0 0 19.30	1.7606	3 29 31.5	13.682	21	1 26 34.39	1.8554	13 54 47.1	12.072
22	0 2 4.95	1.7612	3 43 12.0	13.667	22	1 28 25.81	1.8588	14 6 49.9	12.019
23	0 3 50.64	1.7619	3 56 51.5	13.650	23	1 30 17.44	1.8622	14 18 49.4	11.965
24	0 5 36.38	1.7626	N. 4 10 30.0	13.632	24	1 32 9.27	1.8656	N. 14 30 45.7	11.911

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 21.					FRIDAY 23.			
h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
1 32 9.27	1.8656	N.14 30 45.7	11.911	0	3 6 20.80	2.0693	N.22 42 45.5	8.243
1 34 1.31	1.8691	14 42 38.7	11.855	1	3 8 25.10	2.0740	22 50 57.1	8.144
1 35 53.56	1.8725	14 54 28.3	11.798	2	3 10 29.68	2.0787	22 59 2.8	8.046
1 37 46.01	1.8760	15 6 14.5	11.741	3	3 12 34.54	2.0833	23 7 2.6	7.946
1 39 38.68	1.8796	15 17 57.3	11.683	4	3 14 39.68	2.0880	23 14 56.3	7.844
1 41 31.57	1.8832	15 29 36.5	11.623	5	3 16 45.10	2.0926	23 22 43.9	7.742
1 43 24.67	1.8869	15 41 12.1	11.563	6	3 18 50.79	2.0972	23 30 25.3	7.638
1 45 18.00	1.8907	15 52 44.1	11.503	7	3 20 56.77	2.1019	23 38 0.5	7.534
1 47 11.56	1.8945	16 4 12.5	11.442	8	3 23 3.02	2.1065	23 45 29.4	7.429
1 49 5.34	1.8983	16 15 37.2	11.380	9	3 25 9.55	2.1112	23 52 52.0	7.323
1 50 59.35	1.9021	16 26 58.1	11.316	10	3 27 16.36	2.1158	24 0 8.2	7.217
1 52 53.59	1.9060	16 38 15.1	11.252	11	3 29 23.44	2.1203	24 7 18.0	7.109
1 54 48.07	1.9100	16 49 28.3	11.187	12	3 31 30.80	2.1249	24 14 21.3	7.000
1 56 42.79	1.9139	17 0 37.6	11.121	13	3 33 38.43	2.1294	24 21 18.0	6.891
1 58 37.74	1.9179	17 11 42.8	11.054	14	3 35 46.33	2.1340	24 28 8.2	6.782
2 0 32.93	1.9219	17 22 44.0	10.986	15	3 37 54.51	2.1386	24 34 51.8	6.671
2 2 28.37	1.9260	17 33 41.1	10.917	16	3 40 2.96	2.1430	24 41 28.7	6.559
2 4 24.05	1.9301	17 44 34.1	10.848	17	3 42 11.67	2.1474	24 47 58.8	6.446
2 6 19.98	1.9342	17 55 22.9	10.778	18	3 44 20.64	2.1518	24 54 22.2	6.332
2 8 16.16	1.9384	18 6 7.4	10.707	19	3 46 29.88	2.1562	25 0 38.7	6.217
2 10 12.59	1.9426	18 16 47.7	10.635	20	3 48 39.38	2.1606	25 6 48.3	6.102
2 12 9.27	1.9468	18 27 23.6	10.561	21	3 50 49.15	2.1650	25 12 51.0	5.987
2 14 6.21	1.9511	18 37 55.0	10.487	22	3 52 59.18	2.1693	25 18 46.7	5.869
2 16 3.41	1.9554	N.18 48 22.0	10.412	23	3 55 9.46	2.1735	N.25 24 35.3	5.751
THURSDAY 22.					SATURDAY 24.			
2 18 0.86	1.9597	N.18 58 44.5	10.337	0	3 57 20.00	2.1777	N.25 30 16.8	5.632
2 19 58.57	1.9641	19 9 2.4	10.260	1	3 59 30.79	2.1819	25 35 51.2	5.513
2 21 56.55	1.9685	19 19 15.7	10.182	2	4 1 41.83	2.1861	25 41 18.4	5.393
2 23 54.79	1.9729	19 29 24.3	10.103	3	4 3 53.12	2.1902	25 46 38.4	5.273
2 25 53.30	1.9773	19 39 28.1	10.024	4	4 6 4.66	2.1943	25 51 51.2	5.151
2 27 52.07	1.9817	19 49 27.2	9.944	5	4 8 16.44	2.1983	25 56 56.6	5.028
2 29 51.11	1.9862	19 59 21.4	9.863	6	4 10 28.46	2.2023	26 1 54.6	4.905
2 31 50.42	1.9907	20 9 10.7	9.781	7	4 12 40.72	2.2063	26 6 45.2	4.782
2 33 50.00	1.9952	20 18 55.1	9.698	8	4 14 53.21	2.2102	26 11 28.4	4.658
2 35 49.85	1.9997	20 28 34.4	9.613	9	4 17 5.94	2.2141	26 16 4.1	4.532
2 37 49.97	2.0043	20 38 8.6	9.528	10	4 19 18.90	2.2179	26 20 32.2	4.405
2 39 50.37	2.0089	20 47 37.7	9.443	11	4 21 32.08	2.2216	26 24 52.7	4.279
2 41 51.04	2.0135	20 57 1.7	9.357	12	4 23 45.49	2.2253	26 29 5.7	4.152
2 43 51.99	2.0181	21 6 20.5	9.268	13	4 25 59.12	2.2289	26 33 11.0	4.023
2 45 53.21	2.0227	21 15 33.9	9.179	14	4 28 12.96	2.2324	26 37 8.5	3.894
2 47 54.71	2.0273	21 24 42.0	9.090	15	4 30 27.01	2.2359	26 40 58.3	3.765
2 49 56.49	2.0320	21 33 44.7	9.000	16	4 32 41.27	2.2394	26 44 40.3	3.634
2 51 58.55	2.0367	21 42 42.0	8.908	17	4 34 55.74	2.2429	26 48 14.4	3.503
2 54 0.89	2.0413	21 51 33.7	8.816	18	4 37 10.42	2.2462	26 51 40.7	3.372
2 56 3.51	2.0460	22 0 19.9	8.723	19	4 39 25.29	2.2494	26 54 59.1	3.240
2 58 6.41	2.0506	22 9 0.5	8.629	20	4 41 40.35	2.2527	26 58 9.5	3.107
3 0 9.58	2.0553	22 17 35.4	8.534	21	4 43 55.61	2.2559	27 1 11.9	2.973
3 2 13.04	2.0600	22 26 4.6	8.438	22	4 46 11.06	2.2589	27 4 6.3	2.839
3 4 16.78	2.0647	22 34 28.0	8.341	23	4 48 26.68	2.2618	27 6 52.6	2.705
3 6 20.80	2.0693	N.22 42 45.5	8.243	24	4 50 42.48	2.2647	N.27 9 30.9	2.570

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 25.					TUESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 50 42.48	2.2647	N.27 9 30.9	2.570	0	6 41 20.40	2.3138	N.26 30 8.4	4.278
1	4 52 58.45	2.2677	27 12 1.0	2.434	1	6 43 39.20	2.3129	26 25 47.4	4.423
2	4 55 14.60	2.2706	27 14 23.0	2.298	2	6 45 57.95	2.3120	26 21 17.7	4.567
3	4 57 30.92	2.2733	27 16 36.8	2.162	3	6 48 16.64	2.3110	26 16 39.4	4.710
4	4 59 47.40	2.2759	27 18 42.4	2.024	4	6 50 35.27	2.3099	26 11 52.5	4.853
5	5 2 4.03	2.2785	27 20 39.7	1.887	5	6 52 53.83	2.3087	26 6 57.0	4.996
6	5 4 20.82	2.2811	27 22 28.8	1.749	6	6 55 12.31	2.3074	26 1 53.0	5.138
7	5 6 37.76	2.2835	27 24 9.6	1.610	7	6 57 30.71	2.3061	25 56 40.5	5.280
8	5 8 54.84	2.2858	27 25 42.0	1.471	8	6 59 49.04	2.3048	25 51 19.4	5.422
9	5 11 12.06	2.2881	27 27 6.1	1.332	9	7 2 7.29	2.3034	25 45 49.8	5.563
10	5 13 29.41	2.2903	27 28 21.8	1.192	10	7 4 25.45	2.3019	25 40 11.8	5.704
11	5 15 46.89	2.2924	27 29 29.1	1.051	11	7 6 43.52	2.3004	25 34 25.3	5.846
12	5 18 4.50	2.2945	27 30 27.9	0.910	12	7 9 1.50	2.2988	25 28 30.3	5.987
13	5 20 22.23	2.2964	27 31 18.3	0.769	13	7 11 19.38	2.2972	25 22 26.9	6.126
14	5 22 40.07	2.2983	27 32 0.2	0.628	14	7 13 37.16	2.2955	25 16 15.2	6.265
15	5 24 58.03	2.3001	27 32 33.6	0.486	15	7 15 54.84	2.2937	25 9 55.1	6.404
16	5 27 16.09	2.3018	27 32 58.5	0.343	16	7 18 12.41	2.2919	25 3 26.7	6.543
17	5 29 34.25	2.3035	27 33 14.8	0.201	17	7 20 29.87	2.2901	24 56 50.0	6.682
18	5 31 52.51	2.3051	27 33 22.6	+ 0.058	18	7 22 47.22	2.2882	24 50 4.9	6.820
19	5 34 10.86	2.3065	27 33 21.8	− 0.085	19	7 25 4.45	2.2863	24 43 11.6	6.957
20	5 36 29.29	2.3079	27 33 12.4	0.228	20	7 27 21.57	2.2843	24 36 10.1	7.093
21	5 38 47.81	2.3093	27 32 54.5	0.371	21	7 29 38.57	2.2823	24 29 0.4	7.230
22	5 41 6.41	2.3105	27 32 27.9	0.515	22	7 31 55.45	2.2803	24 21 42.5	7.366
23	5 43 25.07	2.3116	N.27 31 52.7	0.659	23	7 34 12.20	2.2782	N.24 14 16.5	7.501
	MONDAY 26.					WEDNESDAY 28.			
0	5 45 43.80	2.3127	N.27 31 8.8	0.803	0	7 36 28.83	2.2761	N.24 6 42.4	7.636
1	5 48 2.59	2.3137	27 30 16.3	0.947	1	7 38 45.33	2.2739	23 59 0.2	7.770
2	5 50 21.44	2.3146	27 29 15.1	1.092	2	7 41 1.70	2.2717	23 51 10.0	7.903
3	5 52 40.34	2.3154	27 28 5.2	1.237	3	7 43 17.93	2.2694	23 43 11.8	8.036
4	5 54 59.29	2.3162	27 26 46.6	1.382	4	7 45 34.03	2.2672	23 35 5.6	8.169
5	5 57 18.28	2.3168	27 25 19.4	1.526	5	7 47 49.99	2.2649	23 26 51.5	8.302
6	5 59 37.30	2.3173	27 23 43.5	1.671	6	7 50 5.82	2.2627	23 18 29.4	8.433
7	6 1 56.35	2.3178	27 21 58.9	1.817	7	7 52 21.51	2.2603	23 9 59.5	8.563
8	6 4 15.43	2.3183	27 20 5.5	1.962	8	7 54 37.06	2.2579	23 1 21.8	8.694
9	6 6 34.54	2.3186	27 18 3.5	2.106	9	7 56 52.46	2.2555	22 52 36.2	8.824
10	6 8 53.66	2.3187	27 15 52.8	2.252	10	7 59 7.72	2.2532	22 43 42.9	8.952
11	6 11 12.79	2.3188	27 13 33.3	2.397	11	8 1 22.84	2.2508	22 34 42.0	9.079
12	6 13 31.92	2.3189	27 11 5.1	2.542	12	8 3 37.82	2.2484	22 25 33.4	9.206
13	6 15 51.06	2.3189	27 8 28.2	2.687	13	8 5 52.65	2.2459	22 16 17.2	9.333
14	6 18 10.19	2.3188	27 5 42.6	2.832	14	8 8 7.33	2.2434	22 6 53.4	9.460
15	6 20 29.32	2.3187	27 2 48.3	2.977	15	8 10 21.86	2.2409	21 57 22.0	9.586
16	6 22 48.44	2.3185	26 59 45.3	3.122	16	8 12 36.24	2.2385	21 47 43.1	9.710
17	6 25 7.54	2.3182	26 56 33.6	3.268	17	8 14 50.48	2.2361	21 37 56.8	9.834
18	6 27 26.62	2.3178	26 53 13.1	3.413	18	8 17 4.57	2.2336	21 28 3.0	9.957
19	6 29 45.68	2.3173	26 49 44.0	3.557	19	8 19 18.51	2.2311	21 18 1.9	10.079
20	6 32 4.70	2.3168	26 46 6.2	3.702	20	8 21 32.30	2.2286	21 7 53.5	10.202
21	6 34 23.69	2.3162	26 42 19.7	3.847	21	8 23 45.94	2.2262	20 57 37.7	10.323
22	6 36 42.64	2.3154	26 38 24.6	3.991	22	8 25 59.44	2.2237	20 47 14.7	10.443
23	6 39 1.54	2.3146	26 34 20.8	4.135	23	8 28 12.78	2.2211	20 36 44.5	10.562
24	6 41 20.40	2.3138	N.26 30 8.4	4.278	24	8 30 25.97	2.2186	N.20 26 7.2	10.681

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
h m s	s	° ′ ″	″
8 30 25.97	2.2186	N.20 26 7.2	10.681
8 32 39.01	2.2162	20 15 22.8	10.799
8 34 51.91	2.2137	20 4 31.4	10.916
8 37 4.66	2.2113	19 53 32.9	11.033
8 39 17.27	2.2089	19 42 27.5	11.148
8 41 29.73	2.2064	19 31 15.2	11.263
8 43 42.04	2.2040	19 19 56.0	11.377
8 45 54.21	2.2016	19 8 30.0	11.489
8 48 6.24	2.1992	18 56 57.3	11.601
8 50 18.12	2.1968	18 45 17.9	11.712
8 52 29.86	2.1945	18 33 31.9	11.822
8 54 41.46	2.1922	18 21 39.2	11.932
8 56 52.93	2.1900	18 9 40.0	12.041
8 59 4.26	2.1877	17 57 34.3	12.148
9 1 15.46	2.1855	17 45 22.2	12.254
9 3 26.52	2.1833	17 33 3.8	12.360
9 5 37.45	2.1811	17 20 39.0	12.466
9 7 48.25	2.1789	17 8 7.9	12.569
9 9 58.92	2.1768	16 55 30.7	12.672
9 12 9.47	2.1747	16 42 47.3	12.774
9 14 19.89	2.1727	16 29 57.8	12.876
9 16 30.19	2.1707	16 17 2.2	12.976
9 18 40.38	2.1688	16 4 0.7	13.075
9 20 50.45	2.1668	N.15 50 53.2	13.173

FRIDAY 30.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
9 23 0.40	2.1649	N.15 37 39.9	13.270
9 25 10.24	2.1631	15 24 20.8	13.366
9 27 19.97	2.1613	15 10 56.0	13.462
9 29 29.60	2.1596	14 57 25.4	13.557
9 31 39.12	2.1578	14 43 49.2	13.649
9 33 48.54	2.1563	14 30 7.5	13.741
9 35 57.87	2.1547	14 16 20.3	13.832
9 38 7.10	2.1531	14 2 27.6	13.922
9 40 16.24	2.1515	13 48 29.6	14.011
9 42 25.28	2.1499	13 34 26.3	14.099
9 44 34.23	2.1486	13 20 17.7	14.187
9 46 43.11	2.1473	13 6 3.9	14.273
9 48 51.91	2.1460	12 51 45.0	14.357
9 51 0.63	2.1448	12 37 21.1	14.440
9 53 9.28	2.1436	12 22 52.2	14.523
9 55 17.86	2.1424	12 8 18.3	14.605
9 57 26.37	2.1413	11 53 39.6	14.685
9 59 34.82	2.1404	11 38 56.1	14.764
10 1 43.22	2.1395	11 24 7.9	14.842
10 3 51.56	2.1386	11 9 15.0	14.919
10 5 59.85	2.1377	10 54 17.6	14.994
10 8 8.09	2.1370	10 39 15.7	15.069
10 10 16.29	2.1363	10 24 9.3	15.142
10 12 24.45	2.1357	10 8 58.6	15.214
10 14 32.58	2.1352	N. 9 53 43.6	15.286

SATURDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 14 32.58	2.1352	N. 9 53 43.6	15.286
1	10 16 40.68	2.1347	9 38 24.3	15.356
2	10 18 48.75	2.1343	9 23 0.9	15.423
3	10 20 56.79	2.1339	9 7 33.5	15.490
4	10 23 4.82	2.1336	8 52 2.1	15.557
5	10 25 12.83	2.1334	8 36 26.7	15.622
6	10 27 20.83	2.1332	8 20 47.5	15.684
7	10 29 28.82	2.1332	8 5 4.6	15.746
8	10 31 36.82	2.1333	7 49 17.9	15.808
9	10 33 44.82	2.1333	7 33 27.6	15.868
10	10 35 52.82	2.1335	7 17 33.8	15.926
11	10 38 0.84	2.1337	7 1 36.5	15.983
12	10 40 8.87	2.1340	6 45 35.8	16.039
13	10 42 16.92	2.1344	6 29 31.8	16.093
14	10 44 25.00	2.1349	6 13 24.6	16.146
15	10 46 33.11	2.1354	5 57 14.3	16.197
16	10 48 41.25	2.1361	5 41 0.9	16.247
17	10 50 49.44	2.1368	5 24 44.6	16.296
18	10 52 57.67	2.1376	5 8 25.4	16.343
19	10 55 5.95	2.1384	4 52 3.4	16.389
20	10 57 14.28	2.1393	4 35 38.7	16.434
21	10 59 22.67	2.1403	4 19 11.3	16.477
22	11 1 31.12	2.1414	4 2 41.4	16.518
23	11 3 39.64	2.1427	N. 3 46 9.1	16.558

SUNDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 5 48.24	2.1440	N. 3 29 34.4	16.597

PHASES OF THE MOON.

			d	h	m
●	New Moon	Oct.	6	10	18.2
☽	First Quarter		13	2	47.4
○	Full Moon		21	4	17.4
☾	Last Quarter		29	3	20.6

			d	h
☾	Perigee	Oct.	6	17.1
☾	Apogee		20	18.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	*α* Arietis	W.	79 19 16	2574	80 58 47	2555	82 38 44	2536	84 19 7	2518
	Aldebaran	W.	48 2 50	2687	49 39 48	2662	51 17 19	2638	52 55 23	2613
	MARS	W.	32 44 40	2729	34 20 42	2705	35 57 15	2682	37 34 19	2659
	SUN	E.	73 0 24	2900	71 28 5	2880	69 55 21	2861	68 22 12	2842
2	*α* Arietis	W.	92 47 34	2424	94 30 35	2405	96 14 3	2386	97 57 58	2367
	Aldebaran	W.	61 13 42	2500	62 54 55	2478	64 36 39	2457	66 18 53	2436
	MARS	W.	45 47 18	2548	47 27 24	2527	49 7 59	2506	50 49 4	2485
	SUN	E.	60 30 1	2741	58 54 16	2722	57 18 5	2702	55 41 28	2683
3	Aldebaran	W.	74 57 20	2336	76 42 27	2317	78 28 1	2299	80 14 2	2281
	MARS	W.	59 21 43	2384	61 5 40	2366	62 50 4	2346	64 34 56	2328
	Pollux	W.	32 3 46	2294	33 49 55	2273	35 36 34	2253	37 23 42	2234
	SUN	E.	47 31 56	2589	45 52 46	2572	44 13 12	2554	42 33 14	2537
4	Aldebaran	W.	89 10 26	2200	90 58 54	2185	92 47 44	2172	94 36 54	2159
	MARS	W.	73 25 43	2243	75 13 6	2227	77 0 53	2212	78 49 2	2198
	Pollux	W.	46 26 17	2147	48 16 5	2131	50 6 17	2116	51 56 52	2102
	SUN	E.	34 7 51	2464	32 25 47	2452	30 43 26	2440	29 0 48	2431
8	SUN	W.	22 56 55	2365	24 41 20	2367	26 25 42	2371	28 9 58	2376
	α Aquilæ	E.	85 37 46	2691	84 0 54	2704	82 24 20	2720	80 48 7	2738
	Fomalhaut	E.	110 33 1	2376	108 48 52	2376	107 4 43	2378	105 20 37	2382
9	SUN	W.	36 48 43	2424	38 31 44	2436	40 14 27	2450	41 56 51	2464
	α Aquilæ	E.	72 53 40	2856	71 20 25	2887	69 47 49	2920	68 15 55	2954
	Fomalhaut	E.	96 42 13	2423	94 59 11	2434	93 16 25	2447	91 33 57	2461
10	SUN	W.	50 23 39	2543	52 3 53	2559	53 43 44	2577	55 23 11	2595
	VENUS	W.	25 52 21	2688	27 29 17	2698	29 6 0	2709	30 42 28	2722
	α Aquilæ	E.	60 48 28	3172	59 21 45	3225	57 56 6	3282	56 31 33	3343
	Fomalhaut	E.	83 7 1	2545	81 26 51	2566	79 47 9	2586	78 7 55	2607
11	SUN	W.	63 34 14	2687	65 11 11	2706	66 47 43	2725	68 23 50	2744
	VENUS	W.	38 40 11	2797	40 14 43	2815	41 48 52	2832	43 22 38	2849
	SATURN	W.	34 49 56	2487	36 31 27	2498	38 12 43	2510	39 53 43	2521
	Fomalhaut	E.	69 59 28	2729	68 23 27	2756	66 48 1	2784	65 13 12	2814
	α Pegasi	E.	91 23 1	2544	89 42 49	2561	88 3 1	2580	86 23 39	2599
12	SUN	W.	76 18 4	2839	77 51 41	2859	79 24 53	2877	80 57 41	2896
	VENUS	W.	51 5 46	2939	52 37 15	2958	54 8 21	2976	55 39 4	2994
	SATURN	W.	48 14 15	2591	49 53 23	2605	51 32 11	2621	53 10 38	2635
	Fomalhaut	E.	57 29 4	2977	55 58 22	3014	54 28 27	3052	52 59 19	3094
	α Pegasi	E.	78 13 17	2696	76 36 32	2717	75 0 15	2738	73 24 25	2758
13	SUN	W.	88 35 50	2986	90 6 20	3004	91 36 28	3021	93 6 15	3038
	VENUS	W.	63 7 3	3082	64 35 34	3100	66 3 44	3117	67 31 33	3133
	SATURN	W.	61 17 46	2712	62 54 10	2726	64 30 15	2741	66 6 0	2756
	Antares	W.	40 52 37	2631	42 30 50	2648	44 8 40	2663	45 46 9	2679
	Fomalhaut	E.	45 46 59	3336	44 23 29	3394	43 1 6	3458	41 39 55	3525
	α Pegasi	E.	65 32 12	2866	63 59 10	2890	62 26 38	2912	60 54 35	2936
	α Arietis	E.	107 12 13	2649	105 34 25	2666	103 56 59	2681	102 19 54	2696

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	α Arietis	W.	85 59 55	2499	87 41 10	2480	89 22 51	2461	91 4 59	2442
	Aldebaran	W.	54 34 0	2591	56 13 8	2567	57 52 48	2545	59 32 59	2522
	MARS	W.	39 11 54	2636	40 50 0	2614	42 28 36	2592	44 7 42	2570
	SUN	E.	66 48 38	2821	65 14 38	2801	63 40 12	2782	62 5 20	2761
2	α Arietis	W.	99 42 20	2349	101 27 8	2331	103 12 23	2313	104 58 4	2295
	Aldebaran	W.	68 1 36	2415	69 44 49	2395	71 28 31	2375	73 12 41	2355
	MARS	W.	52 30 38	2465	54 12 41	2444	55 55 13	2424	57 38 14	2404
	SUN	E.	54 4 25	2663	52 26 56	2644	50 49 1	2626	49 10 41	2607
3	Aldebaran	W.	82 0 29	2264	83 47 22	2247	85 34 39	2231	87 22 21	2215
	MARS	W.	66 20 14	2311	68 5 58	2293	69 52 8	2276	71 38 43	2259
	Pollux	W.	39 11 19	2215	40 59 24	2197	42 47 56	2180	44 36 54	2163
	SUN	E.	40 52 52	2521	39 12 8	2506	37 31 3	2491	35 49 37	2477
4	Aldebaran	W.	96 26 24	2146	98 16 13	2135	100 6 19	2124	101 56 42	2114
	MARS	W.	80 37 33	2184	82 26 24	2171	84 15 35	2159	86 5 5	2147
	Pollux	W.	53 47 48	2088	55 39 5	2075	57 30 43	2062	59 22 40	2052
	SUN	E.	27 17 57	2424	25 34 56	2417	23 51 46	2414	22 8 31	2412
8	SUN	W.	29 54 7	2383	31 38 5	2391	33 21 52	2401	35 5 25	2412
	α Aquilæ	E.	79 12 17	2757	77 36 53	2779	76 1 57	2802	74 27 32	2828
	Fomalhaut	E.	103 36 37	2388	101 52 45	2394	100 9 2	2403	98 25 31	2412
9	SUN	W.	43 38 55	2478	45 20 39	2494	47 2 1	2510	48 43 1	2525
	α Aquilæ	E.	66 44 45	2992	65 14 22	3033	63 44 50	3076	62 16 11	3122
	Fomalhaut	E.	89 51 49	2476	88 10 2	2492	86 28 38	2509	84 47 37	2527
10	SUN	W.	57 2 13	2612	58 40 51	2631	60 19 4	2649	61 56 52	2669
	VENUS	W.	32 18 38	2736	33 54 30	2750	35 30 4	2765	37 5 18	2781
	α Aquilæ	E.	55 8 11	3408	53 46 3	3479	52 25 15	3554	51 5 50	3635
	Fomalhaut	E.	76 29 10	2630	74 50 56	2654	73 13 14	2678	71 36 4	2703
11	SUN	W.	69 59 31	2764	71 34 46	2782	73 9 37	2801	74 44 3	2821
	VENUS	W.	44 56 2	2868	46 29 2	2885	48 1 40	2904	49 33 54	2921
	SATURN	W.	41 34 27	2534	43 14 53	2548	44 55 0	2562	46 34 47	2576
	Fomalhaut	E.	63 39 2	2844	62 5 31	2875	60 32 40	2907	59 0 30	2942
	α Pegasi	E.	84 44 42	2618	83 6 11	2638	81 28 7	2657	79 50 29	2676
12	SUN	W.	82 30 5	2914	84 2 6	2933	85 33 43	2950	87 4 58	2969
	VENUS	W.	57 9 24	3012	58 39 22	3030	60 8 57	3047	61 38 11	3065
	SATURN	W.	54 48 45	2651	56 26 31	2666	58 3 56	2681	59 41 1	2696
	Fomalhaut	E.	51 31 2	3137	50 3 37	3182	48 37 6	3230	47 11 32	3282
	α Pegasi	E.	71 49 2	2780	70 14 8	2801	68 39 41	2822	67 5 42	2845
3	SUN	W.	94 35 41	3055	96 4 46	3071	97 33 31	3087	99 1 57	3103
	VENUS	W.	68 59 2	3150	70 26 11	3166	71 53 1	3182	73 19 32	3197
	SATURN	W.	67 41 26	2770	69 16 33	2785	70 51 21	2798	72 25 51	2813
	Antares	W.	47 23 17	2694	49 0 5	2709	50 36 33	2723	52 12 42	2738
	Fomalhaut	E.	40 19 59	3599	39 1 24	3680	37 44 16	3768	36 28 40	3865
	α Pegasi	E.	59 23 2	2961	57 52 0	2985	56 21 28	3009	54 51 27	3036
	α Arietis	E.	100 43 9	2711	99 6 44	2726	97 30 39	2741	95 54 54	2755

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.			P. L. of Diff.	III^{h}.			P. L. of Diff.	VI^{h}.			P. L. of Diff.	IX^{h}.			P. L. of Diff.
			°	′	″		°	′	″		°	′	″		°	′	″	
14	SUN	W.	100	30	3	3119	101	57	50	3133	103	25	19	3148	104	52	30	3163
	VENUS	W.	74	45	45	3213	76	11	39	3227	77	37	16	3242	79	2	35	3257
	SATURN	W.	74	0	2	2826	75	33	56	2840	77	7	32	2853	78	40	51	2866
	Antares	W.	53	48	31	2752	55	24	2	2766	56	59	14	2779	58	34	9	2792
	a Pegasi	E.	53	21	59	3063	51	53	4	3090	50	24	42	3119	48	56	55	3148
	a Arietis	E.	94	19	27	2769	92	44	19	2782	91	9	28	2796	89	34	55	2810
15	VENUS	W.	86	5	6	3323	87	28	51	3336	88	52	21	3347	90	15	38	3358
	Antares	W.	66	24	36	2853	67	57	55	2864	69	31	0	2875	71	3	51	2886
	a Arietis	E.	81	46	19	2870	80	13	22	2882	78	40	40	2893	77	8	12	2904
	Aldebaran	E.	113	26	59	2937	111	55	27	2947	110	24	8	2956	108	53	0	2965
16	VENUS	W.	97	8	52	3411	98	30	56	3421	99	52	49	3430	101	14	32	3439
	Antares	W.	78	44	52	2933	80	16	29	2942	81	47	55	2950	83	19	11	2958
	a Arietis	E.	69	29	9	2953	67	57	57	2962	66	26	56	2970	64	56	6	2978
	Aldebaran	E.	101	20	6	3007	99	50	2	3015	98	20	8	3022	96	50	23	3030
17	Antares	W.	90	53	11	2992	92	23	34	2998	93	53	49	3004	95	23	57	3009
	a Aquilæ	W.	46	13	38	4516	47	17	16	4447	48	21	55	4386	49	27	29	4330
	a Arietis	E.	57	24	26	3017	55	54	34	3023	54	24	50	3030	52	55	15	3037
	Aldebaran	E.	89	23	50	3064	87	54	56	3069	86	26	9	3076	84	57	30	3082
	MARS	E.	108	37	38	3078	107	9	1	3082	105	40	30	3087	104	12	5	3092
18	a Aquilæ	W.	55	6	55	4112	56	16	45	4079	57	27	7	4047	58	38	0	4020
	a Arietis	E.	45	29	17	3068	44	0	28	3073	42	31	46	3079	41	3	11	3086
	Aldebaran	E.	77	35	56	3108	76	7	56	3113	74	40	2	3118	73	12	14	3122
	MARS	E.	96	51	24	3114	95	23	31	3116	93	55	41	3119	92	27	55	3122
19	a Aquilæ	W.	64	38	41	3907	65	51	54	3890	67	5	24	3873	68	19	11	3858
	Fomalhaut	W.	38	35	49	3986	39	47	42	3933	41	0	28	3885	42	14	3	3840
	Aldebaran	E.	65	54	34	3144	64	27	18	3148	63	0	7	3153	61	33	1	3157
	MARS	E.	85	9	50	3133	83	42	21	3134	82	14	53	3136	80	47	27	3138
	Pollux	E.	108	16	51	3069	106	48	4	3072	105	19	20	3073	103	50	38	3075
20	a Aquilæ	W.	74	31	33	3799	75	46	36	3791	77	1	48	3782	78	17	9	3775
	Fomalhaut	W.	48	32	5	3674	49	49	20	3649	51	7	2	3626	52	25	8	3604
	Aldebaran	E.	54	18	50	3180	52	52	17	3184	51	25	49	3189	49	59	27	3195
	MARS	E.	73	30	36	3141	72	3	16	3141	70	35	56	3141	69	8	36	3141
	Pollux	E.	96	27	32	3080	94	58	58	3081	93	30	25	3082	92	1	53	3082
21	a Aquilæ	W.	84	35	34	3747	85	51	31	3745	87	7	31	3742	88	23	34	3740
	Fomalhaut	W.	59	0	57	3519	60	21	0	3506	61	41	18	3493	63	1	50	3480
	a Pegasi	W.	36	51	17	3628	38	9	21	3592	39	28	4	3559	40	47	23	3529
	Aldebaran	E.	42	49	28	3230	41	23	54	3239	39	58	31	3249	38	33	20	3259
	MARS	E.	61	51	51	3138	60	24	27	3137	58	57	2	3136	57	29	36	3134
	Pollux	E.	84	39	12	3081	83	10	39	3080	81	42	5	3079	80	13	30	3078
22	Fomalhaut	W.	69	47	38	3431	71	9	20	3422	72	31	12	3414	73	53	13	3407
	a Pegasi	W.	47	31	19	3415	48	53	18	3397	50	15	38	3380	51	38	17	3365
	MARS	E.	50	11	58	3127	48	44	21	3124	47	16	41	3122	45	48	58	3120
	Pollux	E.	72	50	15	3072	71	21	31	3070	69	52	45	3068	68	23	56	3066
	Regulus	E.	109	44	0	3060	108	15	1	3058	106	46	0	3056	105	16	56	3054

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV$^{h.}$	P. L. of Diff.	XVIII$^{h.}$	P. L. of Diff.	XXI$^{h.}$	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
14	Sun	W.	106 19 24	3177	107 46 1	3191	109 12 21	3204	110 38 25	3218
	Venus	W.	80 27 37	3271	81 52 22	3284	83 16 52	3297	84 41 7	3311
	Saturn	W.	80 13 54	2878	81 46 41	2891	83 19 12	2902	84 51 28	2915
	Antares	W.	60 8 47	2805	61 43 8	2818	63 17 13	2830	64 51 2	2842
	α Pegasi	E.	47 29 44	3180	46 3 11	3213	44 37 17	3247	43 12 4	3284
	α Arietis	E.	88 0 40	2822	86 26 41	2835	84 52 58	2847	83 19 31	2859
15	Venus	W.	91 38 42	3370	93 1 33	3381	94 24 11	3392	95 46 37	3401
	Antares	W.	72 36 28	2896	74 8 52	2905	75 41 4	2915	77 13 4	2924
	α Arietis	E.	75 35 58	2914	74 3 57	2924	72 32 9	2934	71 0 33	2943
	Aldebaran	E.	107 22 4	2974	105 51 19	2982	104 20 44	2991	102 50 20	2999
16	Venus	W.	102 36 4	3447	103 57 27	3455	105 18 41	3463	106 39 46	3471
	Antares	W.	84 50 17	2965	86 21 14	2973	87 52 1	2979	89 22 40	2985
	α Arietis	E.	63 25 26	2987	61 54 57	2994	60 24 37	3002	58 54 27	3009
	Aldebaran	E.	95 20 47	3037	93 51 20	3044	92 22 2	3051	90 52 52	3057
17	Antares	W.	96 53 58	3014	98 23 53	3019	99 53 42	3024	101 23 25	3029
	α Aquilæ	W.	50 33 54	4279	51 41 6	4231	52 49 3	4188	53 57 40	4149
	α Arietis	E.	51 25 48	3043	49 56 29	3049	48 27 17	3056	46 58 13	3062
	Aldebaran	E.	83 28 58	3087	82 0 33	3092	80 32 14	3098	79 4 2	3103
	Mars	E.	102 43 46	3097	101 15 33	3101	99 47 25	3105	98 19 22	3110
18	α Aquilæ	W.	59 49 20	3993	61 1 6	3969	62 13 16	3947	63 25 48	3926
	α Arietis	E.	39 34 44	3091	38 6 24	3097	36 38 11	3103	35 10 5	3110
	Aldebaran	E.	71 44 31	3127	70 16 54	3131	68 49 22	3135	67 21 55	3140
	Mars	E.	91 0 12	3125	89 32 33	3127	88 4 56	3129	86 37 22	3131
19	α Aquilæ	W.	69 33 13	3844	70 47 30	3832	72 1 59	3820	73 16 40	3809
	Fomalhaut	W.	43 28 24	3800	44 43 26	3765	45 59 5	3731	47 15 19	3701
	Aldebaran	E.	60 6 0	3161	58 39 4	3166	57 12 14	3170	55 45 29	3175
	Mars	E.	79 20 3	3138	77 52 40	3139	76 25 18	3140	74 57 57	3140
	Pollux	E.	102 21 58	3076	100 53 19	3078	99 24 42	3078	97 56 6	3080
20	α Aquilæ	W.	79 32 37	3768	80 48 12	3762	82 3 54	3757	83 19 41	3751
	Fomalhaut	W.	53 43 38	3585	55 2 29	3566	56 21 40	3549	57 41 10	3534
	Aldebaran	E.	48 33 12	3201	47 7 4	3208	45 41 4	3214	44 15 12	3221
	Mars	E.	67 41 16	3141	66 13 56	3140	64 46 35	3140	63 19 14	3138
	Pollux	E.	90 33 21	3082	89 4 49	3082	87 36 17	3082	86 7 45	3081
21	α Aquilæ	W.	89 39 39	3739	90 55 45	3737	92 11 53	3737	93 28 1	3737
	Fomalhaut	W.	64 22 36	3470	65 43 34	3459	67 4 44	3448	68 26 6	3439
	α Pegasi	W.	42 7 15	3502	43 27 37	3478	44 48 26	3454	46 9 41	3434
	Aldebaran	E.	37 8 21	3272	35 43 37	3286	34 19 9	3301	32 54 59	3320
	Mars	E.	56 2 8	3133	54 34 38	3132	53 7 7	3130	51 39 34	3128
	Pollux	E.	78 44 54	3078	77 16 17	3076	75 47 38	3074	74 18 57	3073
22	Fomalhaut	W.	75 15 22	3400	76 37 39	3393	78 0 4	3386	79 22 37	3379
	α Pegasi	W.	53 1 13	3351	54 24 26	3337	55 47 55	3324	57 11 39	3311
	Mars	E.	44 21 13	3118	42 53 25	3115	41 25 34	3113	39 57 40	3110
	Pollux	E.	66 55 5	3064	65 26 11	3061	63 57 14	3059	62 28 14	3056
	Regulus	E.	103 47 50	3052	102 18 41	3048	100 49 28	3045	99 20 11	3043

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Fomalhaut	W.	80 45 17	3373	82 8 4	3368	83 30 57	3362	84 53 57	3357
	α Pegasi	W.	58 35 38	3300	59 59 50	3288	61 24 15	3278	62 48 52	3267
	Pollux	E.	60 59 11	3053	59 30 4	3051	58 0 54	3047	56 31 40	3044
	Regulus	E.	97 50 51	3039	96 21 27	3035	94 51 58	3032	93 22 25	3029
	JUPITER	E.	103 56 30	3101	102 28 21	3096	101 0 7	3093	99 31 49	3089
24	Fomalhaut	W.	91 50 22	3334	93 13 54	3330	94 37 31	3326	96 1 12	3322
	α Pegasi	W.	69 54 55	3220	71 20 41	3211	72 46 37	3203	74 12 43	3193
	α Arietis	W.	26 29 59	3089	27 58 22	3077	29 27 0	3065	30 55 53	3054
	Pollux	E.	49 4 27	3026	47 34 46	3022	46 5 1	3018	44 35 11	3014
	Regulus	E.	85 53 25	3006	84 23 20	3001	82 53 8	2996	81 22 50	2990
	JUPITER	E.	92 9 1	3066	90 40 10	3061	89 11 13	3056	87 42 9	3050
25	Fomalhaut	W.	103 0 37	3307	104 24 40	3306	105 48 45	3304	107 12 52	3302
	α Pegasi	W.	81 25 48	3152	82 52 55	3143	84 20 12	3135	85 47 39	3126
	α Arietis	W.	38 23 34	3002	39 53 44	2992	41 24 7	2982	42 54 42	2973
	Pollux	E.	37 4 37	2991	35 34 13	2987	34 3 44	2983	32 33 10	2978
	Regulus	E.	73 49 31	2959	72 18 27	2953	70 47 15	2945	69 15 53	2938
	JUPITER	E.	80 15 0	3018	78 45 10	3011	77 15 11	3004	75 45 3	2997
26	α Pegasi	W.	93 7 27	3085	94 35 55	3077	96 4 33	3068	97 33 22	3060
	α Arietis	W.	50 30 39	2924	52 2 28	2912	53 34 31	2902	55 6 47	2892
	Regulus	E.	61 36 35	2896	60 4 11	2887	58 31 35	2877	56 58 47	2868
	JUPITER	E.	68 11 53	2954	66 40 42	2914	65 9 19	2935	63 37 44	2925
	SUN	E.	126 39 4	3286	125 14 36	3275	123 49 55	3265	122 25 2	3253
27	α Pegasi	W.	105 0 1	3018	106 29 52	3009	107 59 54	3001	109 30 6	2993
	α Arietis	W.	62 51 39	2834	64 25 23	2822	65 59 22	2810	67 33 37	2797
	Aldebaran	W.	32 6 33	3061	33 35 30	3031	35 5 4	3002	36 35 14	2974
	Regulus	E.	49 11 31	2814	47 37 21	2803	46 2 57	2791	44 28 17	2779
	JUPITER	E.	55 56 35	2871	54 23 39	2860	52 50 29	2848	51 17 3	2835
	SUN	E.	115 17 9	3193	113 50 51	3179	112 24 17	3166	110 57 27	3153
28	α Arietis	W.	75 29 9	2730	77 5 9	2716	78 41 28	2701	80 18 6	2687
	Aldebaran	W.	44 14 12	2855	45 47 29	2834	47 21 13	2812	48 55 25	2792
	JUPITER	E.	43 25 48	2770	41 50 41	2756	40 15 16	2743	38 39 33	2729
	SUN	E.	103 39 8	3081	102 10 35	3066	100 41 44	3051	99 12 34	3034
29	α Arietis	W.	88 26 17	2610	90 4 58	2594	91 44 1	2579	93 23 25	2562
	Aldebaran	W.	56 53 1	2692	58 29 51	2673	60 7 7	2654	61 44 49	2635
	MARS	W.	35 35 22	2632	37 13 33	2614	38 52 9	2596	40 31 10	2577
	SUN	E.	91 41 42	2952	90 10 29	2935	88 38 55	2918	87 6 59	2901
30	α Arietis	W.	101 46 7	2480	103 27 49	2463	105 9 54	2446	106 52 23	2429
	Aldebaran	W.	69 59 43	2541	71 39 59	2522	73 20 41	2504	75 1 49	2486
	MARS	W.	48 52 31	2487	50 34 3	2468	52 16 1	2450	53 58 25	2432
	SUN	E.	79 21 40	2811	77 47 27	2793	76 12 50	2775	74 37 49	2757
31	Aldebaran	W.	83 33 51	2396	85 17 31	2379	87 1 36	2362	88 46 6	2345
	MARS	W.	62 36 53	2341	64 21 53	2323	66 7 19	2306	67 53 10	2288
	Pollux	W.	40 49 6	2352	42 33 50	2333	44 19 2	2315	46 4 40	2296
	SUN	E.	66 36 47	2667	64 59 23	2649	63 21 35	2632	61 43 23	2615

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Fomalhaut	W.	86 17 3	3351	87 40 15	3347	89 3 32	3343	90 26 54	3338
	α Pegasi	W.	64 13 42	3258	65 38 43	3247	67 3 56	3238	68 29 20	3229
	Pollux	E.	55 2 22	3041	53 33 0	3037	52 3 33	3034	50 34 2	3030
	Regulus	E.	91 52 48	3025	90 23 6	3020	88 53 18	3015	87 23 24	3011
	JUPITER	E.	98 3 26	3085	96 34 58	3081	95 6 25	3076	93 37 46	3071
24	Fomalhaut	W.	97 24 58	3319	98 48 48	3316	100 12 41	3313	101 36 37	3310
	α Pegasi	W.	75 39 0	3185	77 5 27	3177	78 32 4	3168	79 58 51	3160
	α Arietis	W.	32 24 59	3043	33 54 18	3032	35 23 51	3022	36 53 36	3012
	Pollux	E.	43 5 15	3009	41 35 14	3005	40 5 7	3001	38 34 55	2996
	Regulus	E.	79 52 25	2985	78 21 53	2978	76 51 13	2973	75 20 26	2966
	JUPITER	E.	86 12 58	3044	84 43 40	3039	83 14 15	3032	81 44 42	3025
25	Fomalhaut	W.	108 37 1	3301	110 1 11	3300	111 25 22	3300	112 49 33	3300
	α Pegasi	W.	87 15 17	3119	88 43 4	3110	90 11 2	3102	91 39 9	3093
	α Arietis	W.	44 25 29	2963	45 56 28	2954	47 27 39	2943	48 59 3	2934
	Pollux	E.	31 2 30	2975	29 31 46	2971	28 0 57	2968	26 30 4	2965
	Regulus	E.	67 44 22	2930	66 12 41	2922	64 40 50	2913	63 8 48	2905
	JUPITER	E.	74 14 46	2989	72 44 19	2980	71 13 41	2972	69 42 53	2962
26	α Pegasi	W.	99 2 21	3052	100 31 30	3043	102 0 50	3034	103 30 20	3026
	α Arietis	W.	56 39 16	2880	58 12 0	2869	59 44 58	2858	61 18 11	2846
	Regulus	E.	55 25 47	2858	53 52 34	2847	52 19 7	2836	50 45 26	2825
	JUPITER	E.	62 5 57	2915	60 33 57	2904	59 1 43	2894	57 29 16	2883
	SUN	E.	120 59 55	3242	119 34 35	3230	118 9 1	3217	116 43 12	3205
27	α Pegasi	W.	111 0 27	2985	112 30 59	2977	114 1 40	2969	115 32 31	2963
	α Arietis	W.	69 8 9	2784	70 42 58	2771	72 18 4	2758	73 53 27	2744
	Aldebaran	W.	38 5 59	2949	39 37 16	2924	41 9 5	2900	42 41 24	2877
	Regulus	E.	42 53 22	2766	41 18 10	2754	39 42 42	2741	38 6 56	2728
	JUPITER	E.	49 43 21	2823	48 9 23	2810	46 35 8	2798	45 0 37	2784
	SUN	E.	109 30 21	3138	108 2 58	3125	106 35 19	3110	105 7 22	3096
28	α Arietis	W.	81 55 4	2672	83 32 21	2657	85 9 59	2642	86 47 57	2626
	Aldebaran	W.	50 30 3	2772	52 5 8	2752	53 40 39	2732	55 16 37	2712
	JUPITER	E.	37 3 31	2714	35 27 10	2700	33 50 30	2685	32 13 30	2670
	SUN	E.	97 43 4	3018	96 13 14	3002	94 43 4	2985	93 12 33	2969
29	α Arietis	W.	95 3 12	2546	96 43 21	2530	98 23 53	2513	100 4 48	2496
	Aldebaran	W.	63 22 56	2616	65 1 29	2597	66 40 28	2578	68 19 53	2560
	MARS	W.	42 10 36	2559	43 50 27	2541	45 30 43	2523	47 11 24	2504
	SUN	E.	85 34 41	2883	84 2 0	2865	82 28 56	2848	80 55 30	2829
30	α Arietis	W.	108 35 16	2412	110 18 33	2396	112 2 13	2380	113 46 17	2363
	Aldebaran	W.	76 43 22	2467	78 25 21	2449	80 7 46	2431	81 50 36	2414
	MARS	W.	55 41 14	2414	57 24 29	2395	59 8 11	2377	60 52 19	2359
	SUN	E.	73 2 25	2738	71 26 36	2721	69 50 24	2702	68 13 47	2685
31	Aldebaran	W.	90 31 0	2328	92 16 18	2313	94 1 59	2297	95 48 3	2281
	MARS	W.	69 39 27	2271	71 26 9	2253	73 13 17	2237	75 0 50	2220
	Pollux	W.	47 50 45	2279	49 37 16	2262	51 24 12	2245	53 11 33	2228
	SUN	E.	60 4 48	2598	58 25 50	2581	56 46 29	2564	55 6 45	2548

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. 1 Ho
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
SUN.	1	14 28 42.14	9.825	S.14 41 26.8	−47.67	16 9.93	67.03	16 20.14	0.0
Mon.	2	14 32 38.35	9.859	15 0 23.8	47.07	16 10.17	67.14	16 20.49	0.0
Tues.	3	14 36 35.38	9.894	15 19 6.2	46.45	16 10.41	67.26	16 20.01	0.0
Wed.	4	14 40 33.25	9.929	15 37 33.4	−45.81	16 10.65	67.38	16 18.70	0.0
Thur.	5	14 44 31.96	9.963	15 55 45.2	45.15	16 10.89	67.50	16 16.56	0.1
Frid.	6	14 48 31.50	9.998	16 13 40.9	44.48	16 11.13	67.61	16 13.58	0.1
Sat.	7	14 52 31.88	10.034	16 31 20.3	−43.79	16 11.36	67.73	16 9.77	0.1
SUN.	8	14 56 33.10	10.069	16 48 43.0	43.08	16 11.60	67.85	16 5.12	0.2
Mon.	9	15 0 35.15	10.103	17 5 48.4	42.36	16 11.83	67.97	15 59.63	0.2
Tues.	10	15 4 38.05	10.138	17 22 36.2	−41.62	16 12.06	68.09	15 53.31	0.2
Wed.	11	15 8 41.78	10.173	17 39 5.9	40.86	16 12.29	68.21	15 46.16	0.3
Thur.	12	15 12 46.34	10.207	17 55 17.3	40.08	16 12.52	68.33	15 38.17	0.3
Frid.	13	15 16 51.73	10.242	18 11 9.8	−39.29	16 12.74	68.45	15 29.36	0.
Sat.	14	15 20 57.95	10.277	18 26 43.2	38.48	16 12.96	68.57	15 19.72	0.
SUN.	15	15 25 5.01	10.311	18 41 57.0	37.66	16 13.18	68.68	15 9.25	0.
Mon.	16	15 29 12.88	10.345	18 56 50.9	−36.82	16 13.39	68.80	14 57.96	0.
Tues.	17	15 33 21.58	10.380	19 11 24.5	35.97	16 13.60	68.91	14 45.86	0.
Wed.	18	15 37 31.10	10.414	19 25 37.4	35.10	16 13.80	69.03	14 32.93	0.
Thur.	19	15 41 41.44	10.448	19 39 29.3	−34.22	16 14.00	69.14	14 19.19	0.
Frid.	20	15 45 52.59	10.482	19 52 59.8	33.32	16 14.19	69.25	14 4.64	0.
Sat.	21	15 50 4.54	10.515	20 6 8.6	32.41	16 14.38	69.36	13 49.28	0.
SUN.	22	15 54 17.30	10.548	20 18 55.4	−31.48	16 14.57	69.47	13 33.13	0.
Mon.	23	15 58 30.85	10.581	20 31 19.7	30.54	16 14.75	69.58	13 16.18	0.
Tues.	24	16 2 45.18	10.613	20 43 21.3	29.58	16 14.92	69.68	12 58.45	0.
Wed.	25	16 7 0.29	10.645	20 54 59.7	−28.61	16 15.09	69.78	12 39.95	0.
Thur.	26	16 11 16.16	19.677	21 6 14.7	27.63	16 15.26	69.88	12 20.69	0.
Frid.	27	16 15 32.78	10.708	21 17 6.0	26.63	16 15.42	69.98	12 0.69	0.
Sat.	28	16 19 50.12	10.738	21 27 33.1	−25.62	16 15.57	70.08	11 39.96	0.
SUN.	29	16 24 8.18	10.767	21 37 35.8	24.60	16 15.72	70.17	11 18.52	0.
Mon.	30	16 28 26.93	10.795	21 47 13.8	23.56	16 15.87	70.25	10 56.38	0.
Tues.	31	16 32 46.35	10.823	S.21 56 26.8	−22.51	16 16.02	70.34	10 33.58	0.

NOTE.—The mean time of semidiameter passing may be found by subtracting 0ˢ.19 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
SUN.	1	14 28 44.82	9.825	S.14 41 39.8	−47.66	16 20.14	0.031	14 45 4.96
Mon.	2	14 32 41.03	9.860	15 0 36.6	47.06	16 20.49	0.003	14 49 1.52
Tues.	3	14 36 38.08	9.894	15 19 18.8	46.44	16 20.00	0.038	14 52 58.08
Wed.	4	14 40 35.95	9.929	15 37 45.8	−45.81	16 18.68	0.072	14 56 54.63
Thur.	5	14 44 34.66	9.964	15 55 57.4	45.16	16 16.53	0.107	15 0 51.19
Frid.	6	14 48 34.20	9.998	16 13 52.9	44.48	16 13.54	0.142	15 4 47.74
Sat.	7	14 52 34.58	10.033	16 31 32.1	−43.78	16 9.72	0.177	15 8 44.30
SUN.	8	14 56 35.80	10.068	16 48 54.5	43.07	16 5.06	0.212	15 12 40.86
Mon.	9	15 0 37.84	10.103	17 5 59.6	42.35	15 59.57	0.246	15 16 37.41
Tues.	10	15 4 40.73	10.138	17 22 47.2	−41.60	15 53.23	0.281	15 20 33.97
Wed.	11	15 8 44.45	10.172	17 39 16.6	40.84	15 46.07	0.316	15 24 30.52
Thur.	12	15 12 49.00	10.207	17 55 27.7	40.07	15 38.08	0.350	15 28 27.08
Frid.	13	15 16 54.38	10.241	18 11 20.0	−39.28	15 29.26	0.385	15 32 23.64
Sat.	14	15 21 0.58	10.276	18 26 53.0	38.47	15 19.62	0.419	15 36 20.20
SUN.	15	15 25 7.61	10.310	18 42 6.5	37.65	15 9.14	0.454	15 40 16.75
Mon.	16	15 29 15.47	10.344	18 57 0.0	−36.81	14 57.84	0.488	15 44 13.31
Tues.	17	15 33 24.14	10.378	19 11 33.3	35.95	14 45.73	0.522	15 48 9.86
Wed.	18	15 37 33.63	10.412	19 25 45.9	35.09	14 32.79	0.556	15 52 6.42
Thur.	19	15 41 43.94	10.446	19 39 37.4	−34.21	14 19.04	0.590	15 56 2.98
Frid.	20	15 45 55.05	10.480	19 53 7.6	33.31	14 4.49	0.623	15 59 59.54
Sat.	21	15 50 6.96	10.513	20 6 16.1	32.39	13 49.13	0.657	16 3 56.09
SUN.	22	15 54 19.68	10.546	20 19 2.5	−31.47	13 32.97	0.690	16 7 52.65
Mon.	23	15 58 33.19	10.579	20 31 26.4	30.53	13 16.02	0.723	16 11 49.21
Tues.	24	16 2 47.48	10.611	20 43 27.6	29.57	12 58.29	0.755	16 15 45.77
Wed.	25	16 7 2.54	10.643	20 55 5.7	−28.60	12 39.78	0.787	16 19 42.32
Thur.	26	16 11 18.36	10.675	21 6 20.4	27.62	12 20.53	0.818	16 23 38.88
Frid.	27	16 15 34.92	10.705	21 17 11.3	26.62	12 0.52	0.849	16 27 35.44
Sat.	28	16 19 52.21	10.735	21 27 38.1	−25.61	11 39.79	0.879	16 31 32.00
SUN.	29	16 24 10.21	10.764	21 37 40.4	24.59	11 18.35	0.908	16 35 28.56
Mon.	30	16 28 28.90	10.793	21 47 18.1	23.55	10 56.21	0.936	16 39 25.11
Tues.	31	16 32 48.26	10.820	S.21 56 30.7	−22.50	10 33.41	0.963	16 43 21.67

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour, $+9^s.8565$. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	306	219 35 48.4	34 56.8	150.31	− 0.25	9.9964357	−45.3	9 13 24.12
2	307	220 35 57.0	35 5.3	150.40	0.36	9.9963272	45.0	9 9 28.22
3	308	221 36 7.6	35 15.7	150.48	0.45	9.9962194	44.8	9 5 32.31
4	309	222 36 20.2	35 28.2	150.56	− 0.50	9.9961121	−44.6	9 1 36.40
5	310	223 36 34.6	35 42.4	150.64	0.52	9.9960053	44.4	8 57 40.49
6	311	224 36 50.8	35 58.5	150.71	0.52	9.9958990	44.2	8 53 44.58
7	312	225 37 8.6	36 16.1	150.78	− 0.48	9.9957934	−43.9	8 49 48.67
8	313	226 37 28.2	36 35.6	150.85	0.42	9.9956883	43.6	8 45 52.76
9	314	227 37 49.2	36 56.4	150.91	0.33	9.9955840	43.2	8 41 56.85
10	315	228 38 11.8	37 18.9	150.97	− 0.23	9.9954807	−42.8	8 38 0.94
11	316	229 38 35.7	37 42.6	151.02	− 0.11	9.9953785	42.4	8 34 5.03
12	317	230 39 1.0	38 7.7	151.08	+ 0.02	9.9952774	41.9	8 30 9.11
13	318	231 39 27.6	38 34.2	151.14	+ 0.16	9.9951776	−41.3	8 26 13.20
14	319	232 39 55.6	39 2.0	151.20	0.28	9.9950793	40.6	8 22 17.29
15	320	233 40 24.9	39 31.2	151.25	0.38	9.9949828	39.9	8 18 21.38
16	321	234 40 55.4	40 1.5	151.30	+ 0.48	9.9948880	−39.1	8 14 25.47
17	322	235 41 27.3	40 33.2	151.36	0.55	9.9947952	38.3	8 10 29.56
18	323	236 42 0.5	41 6.3	151.41	0.59	9.9947043	37.4	8 6 33.65
19	324	237 42 35.2	41 40.8	151.47	+ 0.60	9.9946157	−36.5	8 2 37.74
20	325	238 43 11.2	42 16.7	151.53	0.58	9.9945292	35.6	7 58 41.83
21	326	239 43 48.7	42 54.0	151.59	0.53	9.9944449	34.6	7 54 45.91
22	327	240 44 27.5	43 32.6	151.65	+ 0.44	9.9943630	−33.7	7 50 50.00
23	328	241 45 8.1	44 13.0	151.72	0.34	9.9942833	32.8	7 46 54.09
24	329	242 45 50.0	44 54.8	151.78	0.22	9.9942057	31.9	7 42 58.18
25	330	243 46 33.7	45 38.3	151.85	+ 0.10	9.9941303	−31.0	7 39 2.27
26	331	244 47 18.7	46 23.1	151.91	− 0.04	9.9940569	30.2	7 35 6.36
27	332	245 48 5.4	47 9.6	151.98	0.18	9.9939854	29.4	7 31 10.44
28	333	246 48 53.5	47 57.5	152.04	− 0.30	9.9939158	−28.7	7 27 14.53
29	334	247 49 43.1	48 47.0	152.10	0.41	9.9938479	28.0	7 23 18.62
30	335	248 50 34.3	49 38.0	152.16	0.50	9.9937815	27.3	7 19 22.71
31	336	249 51 27.0	50 30.5	152.22	− 0.56	9.9937168	−26.6	7 15 26.80

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 1ᵈ.0.

Diff. for 1 Hour, —9ˢ.8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	16 20.2	16 26.5	59 50.9	+2.01	60 14.0	+1.83	21 2.8	2.10	25.6
2	16 32.1	16 36.9	60 34.7	1.59	60 52.1	1.30	21 54.3	2.21	26.6
3	16 40.6	16 43.1	61 5.8	0.95	61 15.0	+0.58	22 49.1	2.36	27.6
4	16 44.4	16 44.2	61 19.6	+0.17	61 19.1	−0.25	23 47.9	2.53	28.6
5	16 42.8	16 39.9	61 13.7	−0.66	61 3.3	1.05	6		0.2
6	16 35.9	16 30.7	60 48.4	1.41	60 29.4	1.73	0 50.3	2.66	1.2
7	16 24.6	16 17.7	60 7.0	−1.99	59 41.7	−2.19	1 54.7	2.68	2.2
8	16 10.3	16 2.5	59 14.5	2.33	58 45.9	2.41	2 58.1	2.58	3.2
9	15 54.6	15 46.6	58 16.7	2.43	57 47.5	2.41	3 57.7	2.38	4.2
10	15 38.8	15 31.3	57 18.9	−2.34	56 51.4	−2.23	4 52.2	2.16	5.2
11	15 24.3	15 17.6	56 25.4	2.10	56 1.1	1.94	5 41.5	1.96	6.2
12	15 11.6	15 6.1	55 38.9	1.76	55 18.8	1.58	6 26.4	1.80	7.2
13	15 1.3	14 57.1	55 1.1	−1.38	54 45.7	−1.19	7 8.2	1.70	8.2
14	14 53.5	14 50.6	54 32.6	0.99	54 21.9	0.80	7 48.3	1.65	9.2
15	14 48.3	14 46.6	54 13.4	0.62	54 7.1	0.44	8 27.6	1.64	10.2
16	14 45.4	14 44.8	54 2.8	−0.28	54 0.5	−0.12	9 7.5	1.69	11.2
17	14 44.7	14 45.0	54 0.0	+0.03	54 1.2	+0.16	9 48.9	1.77	12.2
18	14 45.7	14 46.9	54 3.9	0.29	54 8.1	0.40	10 32.6	1.88	13.2
19	14 48.3	14 50.1	54 13.5	+0.50	54 20.1	+0.60	11 19.3	2.01	14.2
20	14 52.2	14 54.6	54 27.9	0.69	54 36.6	0.77	12 9.0	2.13	15.2
21	14 57.3	15 0.2	54 46.4	0.85	54 57.1	0.93	13 1.2	2.21	16.2
22	15 3.4	15 6.8	55 8.7	+1.00	55 21.2	+1.08	13 54.8	2.24	17.2
23	15 10.4	15 14.3	55 34.6	1.16	55 49.0	1.24	14 48.3	2.21	18.2
24	15 18.5	15 23.0	56 4.3	1.32	56 20.6	1.40	15 40.6	2.14	19.2
25	15 27.7	15 32.6	56 37.8	+1.47	56 55.9	+1.55	16 30.9	2.06	20.2
26	15 37.7	15 43.1	57 14.9	1.62	57 34.7	1.68	17 19.4	1.99	21.2
27	15 48.7	15 54.3	57 55.1	1.72	58 15.9	1.74	18 6.8	1.96	22.2
28	16 0.1	16 5.7	58 36.9	+1.74	58 57.7	+1.71	18 54.0	1.99	23.2
29	16 11.3	16 16.5	59 18.0	1.65	59 37.3	1.54	19 42.5	2.07	24.2
30	16 21.3	16 25.6	59 55.0	1.40	60 10.8	1.21	20 33.7	2.21	25.2
31	16 29.2	16 32.0	60 24.0	+0.98	60 34.2	+0.71	21 28.9	2.39	26.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 5 48.24	2.1440	N. 3 29 34.4	16.597
1	11 7 56.92	2.1453	3 12 57.4	16.635
2	11 10 5.68	2.1467	2 56 18.2	16.670
3	11 12 14.52	2.1482	2 39 37.0	16.704
4	11 14 23.46	2.1498	2 22 53.8	16.737
5	11 16 32.50	2.1515	2 6 8.6	16.768
6	11 18 41.64	2.1533	1 49 21.6	16.797
7	11 20 50.89	2.1552	1 32 32.9	16.825
8	11 23 0.26	2.1571	1 15 42.6	16.852
9	11 25 9.74	2.1590	0 58 50.7	16.877
10	11 27 19.34	2.1612	0 41 57.4	16.899
11	11 29 29.08	2.1634	0 25 2.8	16.920
12	11 31 38.95	2.1657	N. 0 8 7.0	16.940
13	11 33 48.96	2.1680	S. 0 8 50.0	16.958
14	11 35 59.11	2.1704	0 25 48.0	16.974
15	11 38 9.41	2.1730	0 42 46.9	16.989
16	11 40 19.87	2.1757	0 59 46.7	17.002
17	11 42 30.49	2.1783	1 16 47.2	17.013
18	11 44 41.27	2.1811	1 33 48.3	17.022
19	11 46 52.22	2.1840	1 50 49.9	17.030
20	11 49 3.35	2.1870	2 7 51.9	17.037
21	11 51 14.66	2.1900	2 24 54.3	17.042
22	11 53 26.15	2.1931	2 41 56.9	17.043
23	11 55 37.83	2.1963	S. 2 58 59.5	17.043

MONDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 57 49.71	2.1997	S. 3 16 2.1	17.042
1	12 0 1.79	2.2031	3 33 4.6	17.039
2	12 2 14.08	2.2065	3 50 6.8	17.034
3	12 4 26.57	2.2100	4 7 8.7	17.027
4	12 6 39.28	2.2137	4 24 10.1	17.019
5	12 8 52.21	2.2174	4 41 11.0	17.009
6	12 11 5.37	2.2213	4 58 11.2	16.997
7	12 13 18.76	2.2252	5 15 10.6	16.982
8	12 15 32.39	2.2291	5 32 9.0	16.965
9	12 17 46.25	2.2331	5 49 6.4	16.947
10	12 20 0.36	2.2373	6 6 2.6	16.927
11	12 22 14.73	2.2416	6 22 57.6	16.905
12	12 24 29.35	2.2459	6 39 51.2	16.881
13	12 26 44.23	2.2503	6 56 43.3	16.854
14	12 28 59.38	2.2547	7 13 33.7	16.826
15	12 31 14.79	2.2592	7 30 22.4	16.796
16	12 33 30.48	2.2638	7 47 9.2	16.763
17	12 35 46.45	2.2685	8 3 54.0	16.728
18	12 38 2.70	2.2732	8 20 36.6	16.692
19	12 40 19.24	2.2781	8 37 17.0	16.653
20	12 42 36.07	2.2830	8 53 55.0	16.613
21	12 44 53.20	2.2880	9 10 30.6	16.571
22	12 47 10.63	2.2931	9 27 3.5	16.525
23	12 49 28.37	2.2982	9 43 33.6	16.478
24	12 51 46.41	2.3033	S. 10 0 0.9	16.430

TUESDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.
	h m s	s	° ′ ″
0	12 51 46.41	2.3033	S. 10 0 0.9
1	12 54 4.77	2.3086	10 16 25.2
2	12 56 23.45	2.3140	10 32 46.3
3	12 58 42.45	2.3194	10 49 4.1
4	13 1 1.78	2.3249	11 5 18.5
5	13 3 21.44	2.3303	11 21 29.4
6	13 5 41.42	2.3359	11 37 36.6
7	13 8 1.74	2.3416	11 53 40.0
8	13 10 22.41	2.3473	12 9 39.5
9	13 12 43.42	2.3531	12 25 34.9
10	13 15 4.78	2.3589	12 41 26.1
11	13 17 26.49	2.3647	12 57 13.0
12	13 19 48.55	2.3706	13 12 55.5
13	13 22 10.96	2.3766	13 28 33.4
14	13 24 33.74	2.3827	13 44 6.5
15	13 26 56.88	2.3887	13 59 34.7
16	13 29 20.38	2.3948	14 14 57.9
17	13 31 44.25	2.4009	14 30 16.0
18	13 34 8.49	2.4071	14 45 28.9
19	13 36 33.10	2.4133	15 0 36.3
20	13 38 58.08	2.4195	15 15 38.2
21	13 41 23.44	2.4258	15 30 34.4
22	13 43 49.18	2.4321	15 45 24.8
23	13 46 15.29	2.4383	S. 16 0 9.2

WEDNESDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.
0	13 48 41.78	2.4447	S. 16 14 47.5
1	13 51 8.65	2.4511	16 29 19.6
2	13 53 35.91	2.4575	16 43 45.3
3	13 56 3.55	2.4638	16 58 4.6
4	13 58 31.57	2.4702	17 12 17.2
5	14 0 59.98	2.4767	17 26 23.1
6	14 3 28.77	2.4831	17 40 22.1
7	14 5 57.95	2.4895	17 54 14.0
8	14 8 27.51	2.4959	18 7 58.8
9	14 10 57.46	2.5023	18 21 36.3
10	14 13 27.79	2.5088	18 35 6.3
11	14 15 58.51	2.5152	18 48 28.8
12	14 18 29.61	2.5215	19 1 43.6
13	14 21 1.09	2.5278	19 14 50.6
14	14 23 32.95	2.5342	19 27 49.6
15	14 26 5.20	2.5406	19 40 40.6
16	14 28 37.82	2.5468	19 53 23.3
17	14 31 10.81	2.5530	20 5 57.7
18	14 33 44.18	2.5592	20 18 23.7
19	14 36 17.92	2.5654	20 30 41.1
20	14 38 52.03	2.5715	20 42 49.8
21	14 41 26.50	2.5776	20 54 49.6
22	14 44 1.34	2.5837	21 6 40.5
23	14 46 36.54	2.5897	21 18 22.3
24	14 49 12.10	2.5956	S. 21 29 55.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 5.					SATURDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 49 12.10	2.5956	S.21 29 55.0	11.467	0	16 58 31.14	2.7349	S.27 13 47.1	2.473
1	14 51 48.01	2.6014	21 41 18.4	11.311	1	17 1 15.20	2.7337	27 16 9.4	2.271
2	14 54 24.27	2.6071	21 52 32.3	11.153	2	17 3 59.18	2.7322	27 18 19.6	2.068
3	14 57 0.87	2.6128	22 3 36.7	10.993	3	17 6 43.06	2.7304	27 20 17.6	1.866
4	14 59 37.81	2.6185	22 14 31.5	10.832	4	17 9 26.83	2.7286	27 22 3.5	1.664
5	15 2 15.09	2.6241	22 25 16.5	10.668	5	17 12 10.49	2.7266	27 23 37.3	1.463
6	15 4 52.70	2.6295	22 35 51.6	10.503	6	17 14 54.02	2.7243	27 24 59.1	1.263
7	15 7 30.63	2.6348	22 46 16.8	10.336	7	17 17 37.41	2.7219	27 26 8.9	1.063
8	15 10 8.87	2.6400	22 56 31.9	10.167	8	17 20 20.65	2.7192	27 27 6.7	0.863
9	15 12 47.43	2.6452	23 6 36.9	9.997	9	17 23 3.72	2.7164	27 27 52.4	0.663
10	15 15 26.30	2.6504	23 16 31.6	9.825	10	17 25 46.62	2.7134	27 28 26.2	0.465
11	15 18 5.48	2.6554	23 26 15.9	9.651	11	17 28 29.33	2.7102	27 28 48.2	0.267
12	15 20 44.95	2.6602	23 35 49.7	9.476	12	17 31 11.85	2.7069	27 28 58.3	− 0.070
13	15 23 24.71	2.6650	23 45 13.0	9.299	13	17 33 54.16	2.7033	27 28 56.6	+ 0.127
14	15 26 4.75	2.6697	23 54 25.6	9.121	14	17 36 36.25	2.6996	27 28 43.1	0.322
15	15 28 45.07	2.6742	24 3 27.5	8.941	15	17 39 18.11	2.6957	27 28 17.9	0.517
16	15 31 25.65	2.6785	24 12 18.5	8.759	16	17 41 59.73	2.6916	27 27 41.1	0.711
17	15 34 6.49	2.6828	24 20 58.6	8.577	17	17 44 41.10	2.6874	27 26 52.6	0.904
18	15 36 47.59	2.6870	24 29 27.7	8.393	18	17 47 22.22	2.6831	27 25 52.6	1.096
19	15 39 28.93	2.6909	24 37 45.7	8.207	19	17 50 3.07	2.6784	27 24 41.1	1.287
20	15 42 10.50	2.6947	24 45 52.6	8.021	20	17 52 43.63	2.6736	27 23 18.2	1.477
21	15 44 52.30	2.6985	24 53 48.2	7.833	21	17 55 23.90	2.6687	27 21 43.9	1.666
22	15 47 34.32	2.7021	25 1 32.5	7.644	22	17 58 3.87	2.6636	27 19 58.3	1.853
23	15 50 16.55	2.7055	S.25 9 5.5	7.454	23	18 0 43.53	2.6583	S.27 18 1.5	2.040
	FRIDAY 6.					SUNDAY 8.			
0	15 52 58.98	2.7087	S.25 16 27.0	7.262	0	18 3 22.87	2.6529	S.27 15 53.5	2.226
1	15 55 41.60	2.7118	25 23 37.0	7.070	1	18 6 1.88	2.6474	27 13 34.4	2.410
2	15 58 24.40	2.7148	25 30 35.4	6.877	2	18 8 40.56	2.6417	27 11 4.3	2.592
3	16 1 7.38	2.7177	25 37 22.2	6.683	3	18 11 18.89	2.6358	27 8 23.3	2.773
4	16 3 50.52	2.7203	25 43 57.3	6.488	4	18 13 56.86	2.6299	27 5 31.5	2.954
5	16 6 33.81	2.7228	25 50 20.7	6.292	5	18 16 34.48	2.6239	27 2 28.8	3.134
6	16 9 17.25	2.7251	25 56 32.3	6.094	6	18 19 11.73	2.6177	26 59 15.4	3.312
7	16 12 0.82	2.7272	26 2 32.0	5.897	7	18 21 48.60	2.6113	26 55 51.4	3.488
8	16 14 44.51	2.7291	26 8 19.9	5.699	8	18 24 25.08	2.6048	26 52 16.9	3.663
9	16 17 28.31	2.7308	26 13 55.9	5.500	9	18 27 1.17	2.5982	26 48 31.9	3.837
10	16 20 12.21	2.7324	26 19 19.9	5.300	10	18 29 36.86	2.5915	26 44 36.5	4.008
11	16 22 56.20	2.7338	26 24 31.9	5.100	11	18 32 12.15	2.5847	26 40 30.9	4.177
12	16 25 40.27	2.7351	26 29 31.9	4.899	12	18 34 47.02	2.5777	26 36 15.2	4.346
13	16 28 24.41	2.7361	26 34 19.8	4.698	13	18 37 21.47	2.5707	26 31 49.4	4.514
14	16 31 8.60	2.7369	26 38 55.7	4.497	14	18 39 55.50	2.5635	26 27 13.5	4.681
15	16 33 52.84	2.7376	26 43 19.5	4.296	15	18 42 29.09	2.5562	26 22 27.7	4.845
16	16 36 37.11	2.7381	26 47 31.2	4.094	16	18 45 2.24	2.5489	26 17 32.1	5.007
17	16 39 21.41	2.7384	26 51 30.7	3.891	17	18 47 34.95	2.5415	26 12 26.8	5.168
18	16 42 5.72	2.7385	26 55 18.1	3.688	18	18 50 7.22	2.5340	26 7 11.9	5.328
19	16 44 50.03	2.7383	26 58 53.3	3.486	19	18 52 39.03	2.5263	26 1 47.5	5.486
20	16 47 34.32	2.7380	27 2 16.4	3.283	20	18 55 10.38	2.5187	25 56 13.6	5.642
21	16 50 18.59	2.7375	27 5 27.3	3.081	21	18 57 41.27	2.5110	25 50 30.5	5.795
22	16 53 2.82	2.7368	27 8 26.1	2.878	22	19 0 11.70	2.5032	25 44 38.2	5.948
23	16 55 47.01	2.7360	27 11 12.7	2.675	23	19 2 41.65	2.4953	25 38 36.7	6.100
24	16 58 31.14	2.7349	S.27 13 47.1	2.473	24	19 5 11.13	2.4873	S.25 32 26.2	6.249

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 9.					WEDNESDAY 11.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	19 5 11.13	2.4873	S.25 32 26.2	6.249	0	20 55 4.46	2.0980	S.18 12 34.2	11.452
1	19 7 40.13	2.4793	25 26 6.8	6.397	1	20 57 10.12	2.0908	18 1 5.0	11.522
2	19 10 8.65	2.4712	25 19 38.6	6.543	2	20 59 15.36	2.0837	17 49 31.6	11.592
3	19 12 36.68	2.4631	25 13 1.6	6.687	3	21 1 20.17	2.0767	17 37 54.0	11.661
4	19 15 4.22	2.4549	25 6 16.1	6.829	4	21 3 24.56	2.0697	17 26 12.3	11.727
5	19 17 31.27	2.4467	24 59 22.1	6.971	5	21 5 28.53	2.0627	17 14 26.8	11.790
6	19 19 57.83	2.4385	24 52 19.6	7.110	6	21 7 32.08	2.0558	17 2 37.5	11.853
7	19 22 23.89	2.4302	24 45 8.9	7.247	7	21 9 35.22	2.0490	16 50 44.4	11.916
8	19 24 49.45	2.4219	24 37 50.0	7.383	8	21 11 37.96	2.0422	16 38 47.5	11.978
9	19 27 14.52	2.4137	24 30 22.9	7.518	9	21 13 40.29	2.0355	16 26 47.0	12.038
10	19 29 39.09	2.4053	24 22 47.8	7.650	10	21 15 42.22	2.0289	16 14 42.9	12.097
11	19 32 3.16	2.3969	24 15 4.9	7.780	11	21 17 43.76	2.0224	16 2 35.3	12.154
12	19 34 26.72	2.3885	24 7 14.2	7.909	12	21 19 44.91	2.0160	15 50 24.4	12.209
13	19 36 49.78	2.3801	23 59 15.8	8.037	13	21 21 45.68	2.0096	15 38 10.2	12.265
14	19 39 12.33	2.3717	23 51 9.8	8.162	14	21 23 46.07	2.0033	15 25 52.6	12.320
15	19 41 34.38	2.3632	23 42 56.4	8.285	15	21 25 46.08	1.9971	15 13 31.8	12.372
16	19 43 55.92	2.3547	23 34 35.6	8.407	16	21 27 45.72	1.9910	15 1 7.9	12.423
17	19 46 16.95	2.3463	23 26 7.5	8.527	17	21 29 45.00	1.9849	14 48 41.0	12.474
18	19 48 37.48	2.3379	23 17 32.3	8.646	18	21 31 43.91	1.9788	14 36 11.0	12.524
19	19 50 57.50	2.3295	23 8 50.0	8.762	19	21 33 42.46	1.9730	14 23 38.1	12.572
20	19 53 17.02	2.3211	23 0 0.8	8.877	20	21 35 40.67	1.9672	14 11 2.4	12.618
21	19 55 36.03	2.3127	22 51 4.7	8.991	21	21 37 38.53	1.9615	13 58 23.9	12.664
22	19 57 54.54	2.3042	22 42 1.9	9.103	22	21 39 36.05	1.9558	13 45 42.7	12.709
23	20 0 12.54	2.2958	S.22 32 52.4	9.213	23	21 41 33.23	1.9502	S.13 32 58.8	12.752
TUESDAY 10.					THURSDAY 12.				
0	20 2 30.04	2.2875	S.22 23 36.3	9.322	0	21 43 30.07	1.9447	S.13 20 12.4	12.794
1	20 4 47.04	2.2792	22 14 13.8	9.428	1	21 45 26.59	1.9392	13 7 23.5	12.837
2	20 7 3.54	2.2708	22 4 44.9	9.533	2	21 47 22.78	1.9338	12 54 32.0	12.878
3	20 9 19.54	2.2626	21 55 9.8	9.637	3	21 49 18.65	1.9286	12 41 38.1	12.917
4	20 11 35.05	2.2543	21 45 28.5	9.738	4	21 51 14.21	1.9235	12 28 41.9	12.955
5	20 13 50.06	2.2460	21 35 41.2	9.838	5	21 53 9.47	1.9184	12 15 43.5	12.993
6	20 16 4.57	2.2378	21 25 47.9	9.937	6	21 55 4.42	1.9133	12 2 42.8	13.030
7	20 18 18.59	2 2297	21 15 48.7	10.034	7	21 56 59.07	1.9084	11 49 39.9	13.065
8	20 20 32.13	2.2216	21 5 43.8	10.129	8	21 58 53.43	1.9036	11 36 35.0	13.099
9	20 22 45.18	2.2134	20 55 33.2	10.223	9	22 0 47.50	1.8988	11 23 28.0	13.133
10	20 24 57.74	2.2054	20 45 17.0	10.316	10	22 2 41.28	1.8941	11 10 19.0	13.166
11	20 27 9.83	2.1975	20 34 55.3	10.407	11	22 4 34.79	1.8895	10 57 8.1	13.197
12	20 29 21.44	2.1895	20 24 28.1	10.497	12	22 6 28.02	1.8849	10 43 55.3	13.228
13	20 31 32.57	2.1816	20 13 55.7	10.584	13	22 8 20.98	1.8805	10 30 40.7	13.258
14	20 33 43.23	2.1737	20 3 18.1	10.670	14	22 10 13.68	1.8761	10 17 24.3	13.287
15	20 35 53.41	2.1658	19 52 35.3	10.755	15	22 12 6.12	1.8718	10 4 6.3	13.314
16	20 38 3.12	2.1581	19 41 47.5	10.838	16	22 13 58.30	1.8676	9 50 46.6	13.341
17	20 40 12.38	2.1505	19 30 54.7	10.920	17	22 15 50.23	1.8635	9 37 25.3	13.368
18	20 42 21.18	2.1428	19 19 57.1	10.999	18	22 17 41.92	1 8595	9 24 2.4	13.393
19	20 44 29.52	2.1352	19 8 54.8	11.078	19	22 19 33.37	1.8556	9 10 38.1	13.418
20	20 46 37.40	2.1276	18 57 47.7	11.156	20	22 21 24.59	1.8517	8 57 12.3	13.442
21	20 48 44.83	2.1201	18 46 36.0	11.232	21	22 23 15.57	1.8478	8 43 45.1	13.465
22	20 50 51.82	2.1127	18 35 19.8	11.307	22	22 25 6.33	1.8441	8 30 16.5	13.487
23	20 52 58.36	2.1053	18 23 59.2	11.380	23	22 26 56.87	1.8405	8 16 46.7	13.507
24	20 55 4.46	2.0980	S.18 12 34.2	11.452	24	22 28 47.19	1.8369	S. 8 3 15.7	13.527

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 13.					**SUNDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 28 47.19	1.8369	S. 8 3 15.7	13.527	0	23 54 23.96	1.7599	N. 2 54 55.2	13.625
1	22 30 37.30	1.8335	7 49 43.5	13.547	1	23 56 9.56	1.7602	3 8 32.3	13.610
2	22 32 27.21	1.8301	7 36 10.1	13.565	2	23 57 55.18	1.7605	3 22 8.4	13.594
3	22 34 16.92	1.8268	7 22 35.7	13.583	3	23 59 40.82	1.7608	3 35 43.6	13.578
4	22 36 6.43	1.8237	7 9 0.2	13.600	4	0 1 26.48	1.7613	3 49 17.8	13.561
5	22 37 55.76	1.8206	6 55 23.7	13.617	5	0 3 12.18	1.7619	4 2 50.9	13.543
6	22 39 44.90	1.8175	6 41 46.2	13.632	6	0 4 57.91	1.7624	4 16 23.0	13.526
7	22 41 33.86	1.8145	6 28 7.9	13.646	7	0 6 43.67	1.7631	4 29 54.0	13.507
8	22 43 22.64	1.8116	6 14 28.7	13.660	8	0 8 29.48	1.7639	4 43 23.8	13.487
9	22 45 11.25	1.8088	6 0 48.7	13.673	9	0 10 15.34	1.7647	4 56 52.5	13.467
10	22 46 59.69	1.8061	5 47 8.0	13.685	10	0 12 1.25	1.7656	5 10 19.9	13.446
11	22 48 47.98	1.8035	5 33 26.5	13.697	11	0 13 47.21	1.7665	5 23 46.0	13.424
12	22 50 36.11	1.8009	5 19 44.3	13.708	12	0 15 33.23	1.7675	5 37 10.8	13.402
13	22 52 24.08	1.7983	5 6 1.5	13.718	13	0 17 19.31	1.7686	5 50 34.3	13.379
14	22 54 11.91	1.7960	4 52 18.2	13.727	14	0 19 5.46	1.7697	6 3 56.3	13.355
15	22 55 59.60	1.7937	4 38 34.3	13.736	15	0 20 51.68	1.7709	6 17 16.9	13.331
16	22 57 47.15	1.7914	4 24 49.9	13.743	16	0 22 37.97	1.7722	6 30 36.0	13.306
17	22 59 34.57	1.7892	4 11 5.1	13.750	17	0 24 24.35	1.7736	6 43 53.6	13.281
18	23 1 21.85	1.7870	3 57 19.9	13.757	18	0 26 10.81	1.7750	6 57 9.7	13.255
19	23 3 9.01	1.7851	3 43 34.3	13.762	19	0 27 57.35	1.7765	7 10 24.2	13.227
20	23 4 56.06	1.7832	3 29 48.4	13.767	20	0 29 43.99	1.7781	7 23 37.0	13.199
21	23 6 42.99	1.7813	3 16 2.3	13.771	21	0 31 30.72	1.7797	7 36 48.1	13.171
22	23 8 29.81	1.7795	3 2 15.9	13.775	22	0 33 17.55	1.7814	7 49 57.5	13.142
23	23 10 16.53	1.7778	S. 2 48 29.3	13.777	23	0 35 4.49	1.7831	N. 8 3 5.1	13.112
	SATURDAY 14.					**MONDAY 16.**			
0	23 12 3.15	1.7762	S. 2 34 42.6	13.779	0	0 36 51.53	1.7849	N. 8 16 10.9	13.082
1	23 13 49.67	1.7746	2 20 55.8	13.781	1	0 38 38.68	1.7868	8 29 14.9	13.050
2	23 15 36.10	1.7732	2 7 8.9	13.782	2	0 40 25.95	1.7888	8 42 16.9	13.017
3	23 17 22.45	1.7718	1 53 22.0	13.782	3	0 42 13.34	1.7908	8 55 17.0	12.985
4	23 19 8.72	1.7705	1 39 35.1	13.781	4	0 44 0.85	1.7929	9 8 15.1	12.952
5	23 20 54.91	1.7692	1 25 48.3	13.779	5	0 45 48.49	1.7950	9 21 11.2	12.917
6	23 22 41.02	1.7680	1 12 1.6	13.777	6	0 47 36.25	1.7971	9 34 5.2	12.882
7	23 24 27.07	1.7670	0 58 15.0	13.775	7	0 49 24.14	1.7994	9 46 57.1	12.847
8	23 26 13.06	1.7659	0 44 28.6	13.771	8	0 51 12.18	1.8018	9 59 46.8	12.810
9	23 27 58.98	1.7649	0 30 42.5	13.767	9	0 53 0.36	1.8042	10 12 34.3	12.773
10	23 29 44.85	1.7641	0 16 56.6	13.762	10	0 54 48.68	1.8066	10 25 19.6	12.735
11	23 31 30.68	1.7634	S. 0 3 11.0	13.757	11	0 56 37.15	1.8091	10 38 2.5	12.696
12	23 33 16.46	1.7627	N. 0 10 34.2	13.750	12	0 58 25.78	1.8117	10 50 43.1	12.657
13	23 35 2.20	1.7620	0 24 19.0	13.743	13	1 0 14.56	1.8143	11 3 21.3	12.617
14	23 36 47.90	1.7614	0 38 3.4	13.736	14	1 2 3.50	1.8171	11 15 57.1	12.576
15	23 38 33.57	1.7609	0 51 47.4	13.728	15	1 3 52.61	1.8198	11 28 30.4	12.534
16	23 40 19.21	1.7606	1 5 30.8	13.719	16	1 5 41.88	1.8226	11 41 1.2	12.492
17	23 42 4.84	1.7603	1 19 13.7	13.710	17	1 7 31.32	1.8254	11 53 29.4	12.448
18	23 43 50.45	1.7600	1 32 56.0	13.700	18	1 9 20.93	1.8283	12 5 55.0	12.404
19	23 45 36.04	1.7598	1 46 37.7	13.689	19	1 11 10.72	1.8313	12 18 17.9	12.359
20	23 47 21.63	1.7597	2 0 18.7	13.678	20	1 13 0.69	1.8343	12 30 38.1	12.314
21	23 49 7.21	1.7597	2 13 59.0	13.666	21	1 14 50.84	1.8374	12 42 55.6	12.267
22	23 50 52.79	1.7597	2 27 38.6	13.653	22	1 16 41.18	1.8406	12 55 10.2	12.219
23	23 52 38.37	1.7598	2 41 17.3	13.639	23	1 18 31.71	1.8438	13 7 21.9	12.172
24	23 54 23.96	1.7599	N. 2 54 55.2	13.625	24	1 20 22.44	1.8471	N. 13 19 30.8	12.124

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 20 22.44	1.8471	N.13 19 30.8	12.124
1	1 22 13.36	1.8503	13 31 36.8	12.074
2	1 24 4.48	1.8537	13 43 39.7	12.023
3	1 25 55.81	1.8572	13 55 39.5	11.971
4	1 27 47.34	1.8606	14 7 36.2	11.919
5	1 29 39.08	1.8642	14 19 29.8	11.867
6	1 31 31.04	1.8677	14 31 20.2	11.813
7	1 33 23.21	1.8713	14 43 7.3	11.758
8	1 35 15.60	1.8750	14 54 51.2	11.703
9	1 37 8.21	1.8787	15 6 31.7	11.647
10	1 39 1.05	1.8825	15 18 8.8	11.590
11	1 40 54.11	1.8863	15 29 42.5	11.532
12	1 42 47.40	1.8902	15 41 12.6	11.473
13	1 44 40.93	1.8941	15 52 39.2	11.413
14	1 46 34.69	1.8980	16 4 2.2	11.352
15	1 48 28.69	1.9020	16 15 21.5	11.291
16	1 50 22.93	1.9061	16 26 37.1	11.229
17	1 52 17.42	1.9102	16 37 49.0	11.166
18	1 54 12.15	1.9143	16 48 57.0	11.102
19	1 56 7.13	1.9184	17 0 1.2	11.037
20	1 58 2.36	1.9227	17 11 1.5	10.971
21	1 59 57.85	1.9269	17 21 57.7	10.904
22	2 1 53.59	1.9312	17 32 49.9	10.836
23	2 3 49.59	1.9355	N.17 43 38.0	10.767

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 5 45.85	1.9398	N.17 54 22.0	10.698
1	2 7 42.37	1.9442	18 5 1.8	10.628
2	2 9 39.16	1.9487	18 15 37.4	10.557
3	2 11 36.21	1.9531	18 26 8.6	10.484
4	2 13 33.53	1.9576	18 36 35.5	10.411
5	2 15 31.12	1.9622	18 46 58.0	10.337
6	2 17 28.99	1.9667	18 57 16.0	10.262
7	2 19 27.13	1.9713	19 7 29.5	10.187
8	2 21 25.55	1.9759	19 17 38.4	10.110
9	2 23 24.24	1.9805	19 27 42.7	10.032
10	2 25 23.21	1.9852	19 37 42.3	9.953
11	2 27 22.46	1.9899	19 47 37.1	9.873
12	2 29 22.00	1.9946	19 57 27.1	9.792
13	2 31 21.82	1.9993	20 7 12.2	9.711
14	2 33 21.92	2.0041	20 16 52.4	9.629
15	2 35 22.31	2.0088	20 26 27.7	9.546
16	2 37 22.98	2.0136	20 35 57.9	9.461
17	2 39 23.94	2.0185	20 45 23.0	9.376
18	2 41 25.20	2.0234	20 54 43.0	9.289
19	2 43 26.75	2.0282	21 3 57.7	9.202
20	2 45 28.58	2.0329	21 13 7.2	9.114
21	2 47 30.70	2.0378	21 22 11.4	9.025
22	2 49 33.11	2.0427	21 31 10.2	8.935
23	2 51 35.82	2.0476	21 40 3.6	8.843
24	2 53 38.82	2.0524	N.21 48 51.4	8.751

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 53 38.82	2.0524	N.21 48 51.4	8.751
1	2 55 42.11	2.0573	21 57 33.7	8.658
2	2 57 45.70	2.0622	22 6 10.4	8.564
3	2 59 49.58	2.0672	22 14 41.4	8.469
4	3 1 53.76	2.0721	22 23 6.7	8.373
5	3 3 58.23	2.0770	22 31 26.2	8.276
6	3 6 3.00	2.0819	22 39 39.8	8.178
7	3 8 8.06	2.0868	22 47 47.5	8.079
8	3 10 13.42	2.0917	22 55 49.3	7.980
9	3 12 19.07	2.0966	23 3 45.1	7.879
10	3 14 25.01	2.1014	23 11 34.8	7.777
11	3 16 31.24	2.1063	23 19 18.4	7.675
12	3 18 37.77	2.1112	23 26 55.8	7.571
13	3 20 44.59	2.1160	23 34 26.9	7.467
14	3 22 51.69	2.1208	23 41 51.8	7.362
15	3 24 59.09	2.1257	23 49 10.3	7.255
16	3 27 6.78	2.1305	23 56 22.4	7.147
17	3 29 14.75	2.1352	24 3 28.0	7.039
18	3 31 23.01	2.1400	24 10 27.1	6.930
19	3 33 31.55	2.1447	24 17 19.6	6.820
20	3 35 40.37	2.1494	24 24 5.5	6.708
21	3 37 49.48	2.1542	24 30 44.6	6.596
22	3 39 58.87	2.1588	24 37 17.0	6.484
23	3 42 8.53	2.1634	N.24 43 42.7	6.371

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	3 44 18.47	2.1680	N.24 50 1.5	6.256
1	3 46 28.69	2.1726	24 56 13.4	6.140
2	3 48 39.18	2.1770	25 2 18.3	6.024
3	3 50 49.93	2.1814	25 8 16.2	5.906
4	3 53 0.95	2.1859	25 14 7.0	5.788
5	3 55 12.24	2.1903	25 19 50.8	5.670
6	3 57 23.79	2.1947	25 25 27.4	5.549
7	3 59 35.60	2.1990	25 30 56.7	5.428
8	4 1 47.67	2.2032	25 36 18.8	5.307
9	4 3 59.99	2.2074	25 41 33.6	5.185
10	4 6 12.56	2.2116	25 46 41.0	5.062
11	4 8 25.38	2.2157	25 51 41.0	4.938
12	4 10 38.45	2.2198	25 56 33.5	4.813
13	4 12 51.76	2.2238	26 1 18.5	4.688
14	4 15 5.31	2.2277	26 5 56.0	4.562
15	4 17 19.09	2.2316	26 10 25.9	4.434
16	4 19 33.10	2.2354	26 14 48.1	4.306
17	4 21 47.34	2.2392	26 19 2.6	4.177
18	4 24 1.81	2.2430	26 23 9.4	4.048
19	4 26 16.50	2.2466	26 27 8.4	3.918
20	4 28 31.40	2.2502	26 30 59.6	3.787
21	4 30 46.52	2.2537	26 34 42.9	3.656
22	4 33 1.85	2.2571	26 38 18.3	3.524
23	4 35 17.38	2.2604	26 41 45.8	3.392
24	4 37 33.10	2.2637	N.26 45 5.3	3.258

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.			
h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
4 37 33.10	2.2637	N.26 45 5.3	3.258	0	6 28 24.04	2.3200	N.26 39 28.3	3.575
4 39 49.02	2.2669	26 48 16.8	3.124	1	6 30 43.21	2.3189	26 35 49.5	3.718
4 42 5.13	2.2701	26 51 20.2	2.989	2	6 33 2.31	2.3178	26 32 2.1	3.862
4 44 21.44	2.2733	26 54 15.5	2.854	3	6 35 21.35	2.3166	26 28 6.1	4.005
4 46 37.93	2.2762	26 57 2.7	2.718	4	6 37 40.31	2.3153	26 24 1.5	4.147
4 48 54.59	2.2791	26 59 41.7	2.582	5	6 39 59.19	2.3140	26 19 48.4	4.290
4 51 11.42	2.2819	27 2 12.5	2.445	6	6 42 17.99	2.3126	26 15 26.7	4.432
4 53 28.42	2.2847	27 4 35.1	2.307	7	6 44 36.70	2.3110	26 10 56.5	4.574
4 55 45.58	2.2873	27 6 49.4	2.169	8	6 46 55.31	2.3094	26 6 17.8	4.716
4 58 2.90	2.2899	27 8 55.4	2.031	9	6 49 13.83	2.3078	26 1 30.6	4.857
5 0 20.37	2.2924	27 10 53.1	1.892	10	6 51 32.25	2.3061	25 56 35.0	4.997
5 2 37.99	2.2949	27 12 42.4	1.752	11	6 53 50.56	2.3042	25 51 30.9	5.138
5 4 55.76	2.2973	27 14 23.4	1.612	12	6 56 8.75	2.3023	25 46 18.4	5.278
5 7 13.67	2.2995	27 15 55.9	1.472	13	6 58 26.83	2.3003	25 40 57.5	5.417
5 9 31.70	2.3016	27 17 20.0	1.332	14	7 0 44.79	2.2983	25 35 28.3	5.556
5 11 49.86	2.3037	27 18 35.7	1.191	15	7 3 2.63	2.2962	25 29 50.8	5.694
5 14 8.14	2.3057	27 19 42.9	1.048	16	7 5 20.34	2.2941	25 24 5.0	5.832
5 16 26.54	2.3076	27 20 41.5	0.906	17	7 7 37.92	2.2920	25 18 10.9	5.970
5 18 45.05	2.3094	27 21 31.6	0.764	18	7 9 55.38	2.2898	25 12 8.6	6.107
5 21 3.66	2.3111	27 22 13.2	0.622	19	7 12 12.70	2.2874	25 5 58.1	6.243
5 23 22.38	2.3127	27 22 46.2	0.478	20	7 14 29.87	2.2850	24 59 39.4	6.379
5 25 41.19	2.3142	27 23 10.6	0.335	21	7 16 46.90	2.2826	24 53 12.6	6.514
5 28 0.08	2.3156	27 23 26.4	0.192	22	7 19 3.78	2.2801	24 46 37.7	6.649
5 30 19.06	2.3170	N.27 23 33.6	+ 0.048	23	7 21 20.51	2.2776	N.24 39 54.7	6.783
SUNDAY 22.					TUESDAY 24.			
5 32 38.12	2.3182	N.27 23 32.2	− 0.096	0	7 23 37.09	2.2750	N.24 33 3.7	6.916
5 34 57.25	2.3193	27 23 22.1	0.241	1	7 25 53.51	2.2723	24 26 4.7	7.049
5 37 16.44	2.3204	27 23 3.3	0.385	2	7 28 9.77	2.2697	24 18 57.8	7.182
5 39 35.70	2.3214	27 22 35.9	0.529	3	7 30 25.88	2.2671	24 11 42.9	7.314
5 41 55.01	2.3222	27 21 59.8	0.674	4	7 32 41.82	2.2643	24 4 20.1	7.445
5 44 14.37	2.3230	27 21 15.0	0.819	5	7 34 57.59	2.2614	23 56 49.5	7.574
5 46 33.77	2.3237	27 20 21.5	0.964	6	7 37 13.19	2.2586	23 49 11.2	7.703
5 48 53.21	2.3243	27 19 19.3	1.109	7	7 39 28.62	2.2557	23 41 25.1	7.832
5 51 12.68	2.3248	27 18 8.4	1.255	8	7 41 43.88	2.2528	23 33 31.3	7.961
5 53 32.18	2.3252	27 16 48.7	1.401	9	7 43 58.96	2.2498	23 25 29.8	8.088
5 55 51.70	2.3254	27 15 20.3	1.546	10	7 46 13.86	2.2469	23 17 20.7	8.215
5 58 11.23	2.3256	27 13 43.2	1.691	11	7 48 28.59	2.2440	23 9 4.0	8.341
6 0 30.78	2.3258	27 11 57.4	1.836	12	7 50 43.14	2.2409	23 0 39.8	8.466
6 2 50.33	2.3258	27 10 2.9	1.982	13	7 52 57.50	2.2378	22 52 8.1	8.590
6 5 9.87	2.3257	27 7 59.6	2.127	14	7 55 11.68	2.2348	22 43 29.0	8.714
6 7 29.41	2.3256	27 5 47.6	2.272	15	7 57 25.68	2.2317	22 34 42.4	8.837
6 9 48.94	2.3253	27 3 26.9	2.417	16	7 59 39.49	2.2287	22 25 48.5	8.959
6 12 8.45	2.3249	27 0 57.5	2.563	17	8 1 53.12	2.2256	22 16 47.3	9.081
6 14 27.93	2.3244	26 58 19.3	2.708	18	8 4 6.56	2.2224	22 7 38.8	9.202
6 16 47.38	2.3239	26 55 32.5	2.852	19	8 6 19.81	2.2192	21 58 23.1	9.321
6 19 6.80	2.3234	26 52 37.0	2.997	20	8 8 32.87	2.2161	21 49 0.3	9.439
6 21 26.19	2.3227	26 49 32.8	3.142	21	8 10 45.74	2.2129	21 39 30.4	9.557
6 23 45.53	2.3218	26 46 20.0	3.286	22	8 12 58.42	2.2098	21 29 53.5	9.674
6 26 4.81	2.3209	26 42 58.5	3.431	23	8 15 10.91	2.2067	21 20 9.5	9.791
6 28 24.04	2.3200	N.26 39 28.3	3.575	24	8 17 23.22	2.2036	N.21 10 18.5	9.907

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 17 23.22	2.2036	N.21 10 18.5	9.907
1	8 19 35.34	2.2003	21 0 20.6	10.022
2	8 21 47.26	2.1970	20 50 15.9	10.135
3	8 23 58.98	2.1938	20 40 4.4	10.248
4	8 26 10.51	2.1907	20 29 46.2	10.360
5	8 28 21.86	2.1876	20 19 21.2	10.472
6	8 30 33.02	2.1844	20 8 49.6	10.582
7	8 32 43.99	2.1812	19 58 11.4	10.691
8	8 34 54.77	2.1781	19 47 26.7	10.799
9	8 37 5.36	2.1749	19 36 35.5	10.907
10	8 39 15.76	2.1718	19 25 37.8	11.014
11	8 41 25.98	2.1687	19 14 33.8	11.119
12	8 43 36.01	2.1657	19 3 23.5	11.224
13	8 45 45.86	2.1627	18 52 6.9	11.328
14	8 47 55.53	2.1596	18 40 44.1	11.431
15	8 50 5.01	2.1565	18 29 15.2	11.533
16	8 52 14.31	2.1536	18 17 40.2	11.634
17	8 54 23.44	2.1507	18 5 59.1	11.735
18	8 56 32.39	2.1477	17 54 12.0	11.834
19	8 58 41.16	2.1448	17 42 19.0	11.932
20	9 0 49.76	2.1419	17 30 20.1	12.029
21	9 2 58.19	2.1391	17 18 15.5	12.125
22	9 5 6.45	2.1362	17 6 5.1	12.221
23	9 7 14.54	2.1334	N.16 53 49.0	12.316

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 9 22.46	2.1307	N.16 41 27.2	12.409
1	9 11 30.22	2.1280	16 28 59.9	12.501
2	9 13 37.82	2.1253	16 16 27.1	12.592
3	9 15 45.26	2.1227	16 3 48.8	12.683
4	9 17 52.55	2.1202	15 51 5.1	12.772
5	9 19 59.68	2.1176	15 38 16.1	12.861
6	9 22 6.66	2.1151	15 25 21.8	12.948
7	9 24 13.49	2.1127	15 12 22.3	13.035
8	9 26 20.18	2.1102	14 59 17.6	13.121
9	9 28 26.72	2.1079	14 46 7.8	13.205
10	9 30 33.12	2.1056	14 32 53.0	13.288
11	9 32 39.39	2.1033	14 19 33.2	13.371
12	9 34 45.52	2.1011	14 6 8.5	13.452
13	9 36 51.52	2.0990	13 52 39.0	13.532
14	9 38 57.40	2.0969	13 39 4.6	13.612
15	9 41 3.15	2.0948	13 25 25.5	13.690
16	9 43 8.78	2.0928	13 11 41.8	13.767
17	9 45 14.29	2.0909	12 57 53.4	13.844
18	9 47 19.69	2.0891	12 44 0.5	13.919
19	9 49 24.98	2.0873	12 30 3.1	13.993
20	9 51 30.16	2.0855	12 16 1.3	14.067
21	9 53 35.24	2.0838	12 1 55.1	14.139
22	9 55 40.22	2.0822	11 47 44.6	14.210
23	9 57 45.10	2.0806	11 33 29.9	14.279
24	9 59 49.89	2.0791	N.11 19 11.1	14.348

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.
	h m s	s	° ′ ″
0	9 59 49.89	2.0791	N.11 19 11.1
1	10 1 54.60	2.0777	11 4 48.2
2	10 3 59.22	2.0764	10 50 21.2
3	10 6 3.76	2.0751	10 35 50.1
4	10 8 8.23	2.0738	10 21 15.2
5	10 10 12.62	2.0726	10 6 36.5
6	10 12 16.94	2.0715	9 51 54.0
7	10 14 21.20	2.0705	9 37 7.8
8	10 16 25.40	2.0696	9 22 17.9
9	10 18 29.55	2.0687	9 7 24.4
10	10 20 33.65	2.0679	8 52 27.4
11	10 22 37.70	2.0672	8 37 26.9
12	10 24 41.71	2.0665	8 22 23.1
13	10 26 45.68	2.0659	8 7 16.0
14	10 28 49.62	2.0655	7 52 5.6
15	10 30 53.54	2.0651	7 36 52.0
16	10 32 57.43	2.0647	7 21 35.3
17	10 35 1.30	2.0644	7 6 15.6
18	10 37 5.16	2.0643	6 50 52.9
19	10 39 9.01	2.0642	6 35 27.3
20	10 41 12.86	2.0641	6 19 58.8
21	10 43 16.70	2.0640	6 4 27.6
22	10 45 20.54	2.0642	5 48 53.7
23	10 47 24.40	2.0645	N. 5 33 17.2

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.
0	10 49 28.28	2.0648	N. 5 17 38.1
1	10 51 32.18	2.0652	5 1 56.5
2	10 53 36.10	2.0656	4 46 12.5
3	10 55 40.05	2.0661	4 30 26.2
4	10 57 44.03	2.0667	4 14 37.7
5	10 59 48.06	2.0675	3 58 46.9
6	11 1 52.13	2.0683	3 42 54.0
7	11 3 56.25	2.0692	3 26 59.1
8	11 6 0.43	2.0701	3 11 2.2
9	11 8 4.66	2.0711	2 55 3.4
10	11 10 8.96	2.0723	2 39 2.8
11	11 12 13.34	2.0736	2 23 0.4
12	11 14 17.79	2.0748	2 6 56.4
13	11 16 22.32	2.0762	1 50 50.8
14	11 18 26.94	2.0778	1 34 43.7
15	11 20 31.66	2.0794	1 18 35.2
16	11 22 36.47	2.0810	1 2 25.3
17	11 24 41.38	2.0827	0 46 14.2
18	11 26 46.40	2.0846	0 30 1.9
19	11 28 51.53	2.0866	N. 0 13 48.5
20	11 30 56.79	2.0887	S. 0 2 26.0
21	11 33 2.17	2.0908	0 18 41.4
22	11 35 7.68	2.0929	0 34 57.7
23	11 37 13.32	2.0952	0 51 14.7
24	11 39 19.10	2.0976	S. 1 7 32.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
h m s	s	° ′ ″	″
11 39 19.10	2.0976	S. 1 7 32.4	16.300
11 41 25.03	2.1001	1 23 50.7	16.310
11 43 31.11	2.1027	1 40 9.6	16.318
11 45 37.35	2.1054	1 56 28.9	16.324
11 47 43.76	2.1081	2 12 48.5	16.329
11 49 50.33	2.1109	2 29 8.4	16.333
11 51 57.07	2.1138	2 45 28.5	16.336
11 54 3.99	2.1169	3 1 48.7	16.336
11 56 11.10	2.1201	3 18 8.8	16.334
11 58 18.40	2.1233	3 34 28.8	16.332
12 0 25.90	2.1266	3 50 48.6	16.328
12 2 33.59	2.1299	4 7 8.2	16.323
12 4 41.49	2.1335	4 23 27.4	16.316
12 6 49.61	2.1371	4 39 46.1	16.307
12 8 57.94	2.1407	4 56 4.3	16.297
12 11 6.49	2.1444	5 12 21.8	16.285
12 13 15.27	2.1483	5 28 38.5	16.272
12 15 24.29	2.1522	5 44 54.4	16.257
12 17 33.54	2.1563	6 1 9.3	16.240
12 19 43.04	2.1604	6 17 23.2	16.222
12 21 52.79	2.1646	6 33 35.9	16.202
12 24 2.79	2.1688	6 49 47.4	16.180
12 26 13.05	2.1732	7 5 57.5	16.157
12 28 23.58	2.1777	S. 7 22 6.2	16.132

MONDAY 30.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
12 30 34.38	2.1823	S. 7 38 13.4	16.106
12 32 45.46	2.1870	7 54 18.9	16.077
12 34 56.82	2.1917	8 10 22.6	16.047
12 37 8.46	2.1964	8 26 24.5	16.015
12 39 20.39	2.2013	8 42 24.4	15.981
12 41 32.62	2.2064	8 58 22.2	15.945
12 43 45.16	2.2115	9 14 17.8	15.908
12 45 58.00	2.2166	9 30 11.2	15.869
12 48 11.15	2.2219	9 46 2.1	15.828
12 50 24.62	2.2272	10 1 50.5	15.785
12 52 38.41	2.2325	10 17 36.3	15.741
12 54 52.52	2.2379	10 33 19.4	15.694
12 57 6.96	2.2435	10 48 59.6	15.646
12 59 21.74	2.2491	11 4 36.9	15.596
13 1 36.86	2.2548	11 20 11.1	15.543
13 3 52.32	2.2606	11 35 42.1	15.489
13 6 8.13	2.2665	11 51 9.8	15.433
13 8 24.30	2.2724	12 6 34.1	15.375
13 10 40.82	2.2783	12 21 54.8	15.315
13 12 57.70	2.2844	12 37 11.9	15.253
13 15 14.95	2.2906	12 52 25.2	15.190
13 17 32.57	2.2968	13 7 34.7	15.124
13 19 50.56	2.3030	13 22 40.1	15.056
13 22 8.93	2.3092	13 37 41.4	14.987
13 24 27.67	2.3156	S. 13 52 38.5	14.915

TUESDAY, DECEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 24 27.67	2.3156	S. 13 52 38.5	14.915

PHASES OF THE MOON.

			d h m
●	New Moon	Nov.	4 19 27.0
☽	First Quarter		11 17 40.6
○	Full Moon		19 22 24.9
☾	Last Quarter		27 14 43.7

			d h
☾	Perigee	Nov.	4 4.8
☾	Apogee		16 21.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Aldebaran	W.	97 34 30	2266	99 21 19	2252	101 8 29	2238	102 56 0	2224
	MARS	W.	76 48 47	2204	78 37 8	2188	80 25 54	2172	82 15 3	2157
	Pollux	W.	54 59 19	2212	56 47 29	2195	58 36 4	2180	60 25 2	2165
	SUN	E.	53 26 39	2533	51 46 11	2518	50 5 23	2503	48 24 14	2489
2	Aldebaran	W.	111 58 23	2166	113 47 42	2156	115 37 16	2148	117 27 2	2140
	MARS	W.	91 26 24	2088	93 17 42	2075	95 9 19	2063	97 1 15	2052
	Pollux	W.	69 35 22	2096	71 26 27	2084	73 17 51	2072	75 9 33	2062
	Regulus	W.	32 36 1	2085	34 27 23	2073	36 19 3	2062	38 11 1	2052
	SUN	E.	39 53 52	2429	38 10 59	2419	36 27 52	2412	34 44 34	2404
6	SUN	W.	17 32 26	2525	19 13 5	2511	20 54 3	2503	22 35 12	2500
	a Aquilæ	E.	65 57 21	2891	64 24 51	2929	62 53 9	2970	61 22 19	3015
	Fomalhaut	E.	89 6 33	2383	87 22 34	2396	85 38 53	2409	83 55 31	2424
	a Pegasi	E.	111 1 55	2266	109 15 6	2273	107 28 27	2281	105 41 59	2289
7	SUN	W.	31 0 30	2530	32 41 2	2542	34 21 17	2554	36 1 15	2569
	Fomalhaut	E.	75 24 37	2517	73 43 48	2540	72 3 31	2564	70 23 47	2589
	a Pegasi	E.	96 53 23	2348	95 8 34	2364	93 24 7	2379	91 40 2	2395
8	SUN	W.	44 15 53	2650	45 53 40	2668	47 31 3	2687	49 8 1	2704
	Fomalhaut	E.	62 14 16	2736	60 38 24	2769	59 3 16	2805	57 28 55	2844
	a Pegasi	E.	83 5 42	2486	81 24 9	2507	79 43 5	2527	78 2 29	2548
9	SUN	W.	57 6 32	2803	58 40 56	2822	60 14 55	2842	61 48 28	2862
	VENUS	W.	25 20 40	2887	26 53 15	2905	28 25 27	2924	29 57 16	2942
	Fomalhaut	E.	49 50 10	3065	48 21 18	3118	46 53 30	3175	45 26 51	3236
	a Pegasi	E.	69 47 3	2662	68 9 32	2687	66 32 34	2711	64 56 9	2736
	a Arietis	E.	111 42 54	2466	110 0 53	2484	108 19 17	2503	106 38 8	2521
10	SUN	W.	69 29 48	2962	71 0 49	2981	72 31 25	3001	74 1 37	3019
	VENUS	W.	37 30 27	3037	38 59 54	3056	40 28 58	3074	41 57 39	3093
	a Pegasi	E.	57 2 39	2873	55 29 45	2902	53 57 29	2932	52 25 51	2963
	a Arietis	E.	98 18 49	2614	96 40 13	2632	95 2 2	2650	93 24 15	2669
11	SUN	W.	81 26 51	3111	82 54 47	3129	84 22 21	3146	85 49 35	3163
	VENUS	W.	49 15 25	3184	50 41 53	3202	52 8 0	3219	53 33 47	3235
	a Arietis	E.	85 21 14	2753	83 45 45	2769	82 10 37	2786	80 35 51	2801
	Aldebaran	E.	117 3 2	2823	115 29 4	2838	113 55 25	2852	112 22 4	2865
12	SUN	W.	93 0 52	3242	94 26 12	3255	95 51 16	3270	97 16 3	3283
	VENUS	W.	60 37 58	3313	62 1 54	3327	63 25 34	3342	64 48 57	3355
	a Arietis	E.	72 46 56	2875	71 14 5	2888	69 41 31	2901	68 9 14	2914
	Aldebaran	E.	104 39 35	2931	103 7 55	2942	101 36 30	2954	100 5 20	2966
	MARS	E.	124 57 52	2810	123 23 37	2822	121 49 38	2834	120 15 54	2845
13	SUN	W.	104 16 9	3345	105 39 28	3357	107 2 34	3367	108 25 28	3377
	VENUS	W.	71 42 12	3416	73 4 10	3427	74 25 50	3437	75 47 31	3447
	a Aquilæ	W.	43 53 40	4628	44 55 41	4550	45 58 49	4479	47 3 0	4414
	a Arietis	E.	60 31 44	2973	59 0 58	2984	57 30 25	2994	56 0 5	3004
	Aldebaran	E.	92 33 4	3020	91 3 16	3030	89 33 41	3040	88 4 18	3049
	MARS	E.	112 30 40	2897	110 58 23	2905	109 26 11	2914	107 54 10	[illegible]

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Aldebaran	W.	104 43 52	2211	106 32 3	2199	108 20 32	2187	110 9 19	2176
	Mars	W.	84 4 36	2142	85 54 31	2128	87 44 48	2114	89 35 26	2101
	Pollux	W.	62 14 23	2150	64 4 6	2136	65 54 11	2122	67 44 36	2109
	Sun	E.	46 42 46	2476	45 0 59	2462	43 18 53	2450	41 36 30	2440
2	Aldebaran	W.	119 17 0	2134	121 7 8	2128	122 57 25	2123	124 47 49	2119
	Mars	W.	98 53 28	2041	100 45 58	2032	102 38 43	2022	104 31 43	2014
	Pollux	W.	77 1 31	2052	78 53 45	2041	80 46 15	2032	82 38 59	2025
	Regulus	W.	40 3 15	2041	41 55 45	2031	43 48 31	2022	45 41 31	2014
	Sun	E.	33 1 5	2398	31 17 28	2395	29 33 46	2393	27 50 1	2393
6	Sun	W.	24 16 25	2500	25 57 38	2504	27 38 45	2510	29 19 44	2520
	α Aquilæ	E.	59 52 25	3065	58 23 32	3118	56 55 44	3174	55 29 4	3236
	Fomalhaut	E.	82 12 31	2441	80 29 54	2458	78 47 41	2477	77 5 55	2497
	α Pegasi	E.	103 55 44	2300	102 9 44	2310	100 23 59	2322	98 38 32	2335
7	Sun	W.	37 40 53	2583	39 20 11	2599	40 59 8	2615	42 37 42	2632
	Fomalhaut	E.	68 44 37	2616	67 6 4	2643	65 28 8	2672	63 50 51	2704
	α Pegasi	E.	89 56 20	2412	88 13 2	2429	86 30 9	2448	84 47 42	2467
8	Sun	W.	50 44 35	2724	52 20 43	2744	53 56 25	2763	55 31 41	2782
	Fomalhaut	E.	55 55 24	2883	54 22 43	2925	52 50 56	2969	51 20 4	3015
	α Pegasi	E.	76 22 23	2570	74 42 47	2592	73 3 41	2615	71 25 6	2638
9	Sun	W.	63 21 35	2883	64 54 16	2903	66 26 32	2923	67 58 22	2942
	Venus	W.	31 28 41	2961	32 59 43	2980	34 30 21	2998	36 0 36	3018
	Fomalhaut	E.	44 1 24	3300	42 37 13	3372	41 14 24	3447	39 53 1	3530
	α Pegasi	E.	63 20 17	2763	61 45 0	2788	60 10 17	2816	58 36 10	2844
	α Arietis	E.	104 57 24	2540	103 17 7	2559	101 37 15	2577	99 57 49	2596
10	Sun	W.	75 31 26	3038	77 0 52	3057	78 29 54	3075	79 58 34	3094
	Venus	W.	43 25 57	3112	44 53 52	3130	46 21 25	3148	47 48 36	3167
	α Pegasi	E.	50 54 52	2996	49 24 34	3029	47 54 57	3065	46 26 4	3101
	α Arietis	E.	91 46 53	2686	90 9 54	2703	88 33 18	2720	86 57 5	2737
11	Sun	W.	87 16 29	3179	88 43 3	3195	90 9 18	3211	91 35 14	3226
	Venus	W.	54 59 15	3252	56 24 23	3267	57 49 13	3283	59 13 44	3298
	α Arietis	E.	79 1 25	2817	77 27 19	2832	75 53 33	2846	74 20 5	2861
	Aldebaran	E.	110 49 0	2878	109 16 13	2892	107 43 44	2905	106 11 31	2918
12	Sun	W.	98 40 34	3297	100 4 49	3309	101 28 50	3322	102 52 36	3333
	Venus	W.	66 12 5	3368	67 34 58	3381	68 57 36	3393	70 20 1	3405
	α Arietis	E.	66 37 13	2927	65 5 28	2939	63 33 59	2950	62 2 44	2962
	Aldebaran	E.	98 34 25	2977	97 3 44	2989	95 33 17	3000	94 3 4	3010
	Mars	E.	118 42 25	2856	117 9 10	2867	115 36 9	2877	114 3 21	2887
13	Sun	W.	109 48 11	3387	111 10 42	3396	112 33 3	3405	113 55 14	3414
	Venus	W.	77 8 54	3456	78 30 7	3466	79 51 9	3474	81 12 2	3482
	α Aquilæ	W.	48 8 9	4355	49 14 11	4301	50 21 3	4252	51 28 40	4209
	α Arietis	E.	54 29 57	3014	53 0 1	3023	51 30 17	3032	50 0 44	3041
	Aldebaran	E.	86 35 6	3058	85 6 5	3066	83 37 14	3074	82 8 33	3082
	Mars	E.	106 22 19	2930	104 50 38	2938	103 19 7	2944	101 47 44	2951

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″
14	SUN	W.	115 17 15	3422	116 39 7	3430	118 0 50	3437	119 22 25
	VENUS	W.	82 32 46	3489	83 53 22	3497	85 13 49	3504	86 34 9
	α Aquilæ	W.	52 36 58	4167	53 45 55	4131	54 55 27	4097	56 5 32
	α Arietis	E.	48 31 22	3049	47 2 10	3057	45 33 8	3065	44 4 16
	Aldebaran	E.	80 40 2	3090	79 11 40	3097	77 43 27	3104	76 15 22
	MARS	E.	100 16 30	2957	98 45 23	2963	97 14 24	2968	95 43 31
15	VENUS	W.	93 14 14	3535	94 34 0	3539	95 53 41	3542	97 13 19
	α Aquilæ	W.	62 2 54	3941	63 15 32	3921	64 28 30	3904	65 41 46
	Aldebaran	E.	68 56 54	3140	67 29 33	3145	66 2 18	3150	64 35 9
	MARS	E.	88 10 32	2993	86 40 10	2995	85 9 51	2997	83 39 35
	Pollux	E.	111 19 30	3073	109 50 48	3076	108 22 9	3079	106 53 34
16	VENUS	W.	103 50 49	3554	105 10 14	3554	106 29 39	3555	107 49 3
	α Aquilæ	W.	71 52 3	3819	73 6 46	3807	74 21 41	3796	75 36 47
	Fomalhaut	W.	45 57 18	3758	47 13 4	3727	48 29 23	3698	49 46 12
	Aldebaran	E.	57 20 48	3177	55 54 11	3181	54 27 39	3185	53 1 12
	MARS	E.	76 8 43	3004	74 38 35	3005	73 8 28	3004	71 38 20
	Pollux	E.	99 31 16	3089	98 2 53	3090	96 34 31	3090	95 6 9
17	α Aquilæ	W.	81 54 29	3749	83 10 24	3744	84 26 25	3739	85 42 31
	Fomalhaut	W.	56 16 45	3565	57 35 57	3547	58 55 29	3531	60 15 19
	Aldebaran	E.	45 50 19	3214	44 24 26	3220	42 58 40	3226	41 33 2
	MARS	E.	64 7 25	2997	62 37 9	2995	61 6 50	2993	59 36 28
	Pollux	E.	87 44 15	3086	86 15 48	3085	84 47 20	3083	83 18 50
18	α Aquilæ	W.	92 4 9	3718	93 20 37	3716	94 37 7	3716	95 53 37
	Fomalhaut	W.	66 58 25	3450	68 19 45	3439	69 41 17	3428	71 3 2
	α Pegasi	W.	44 40 27	3440	46 1 58	3418	47 23 54	3397	48 46 14
	MARS	E.	52 3 47	2975	50 33 3	2971	49 2 14	2968	47 31 21
	Pollux	E.	75 55 36	3068	74 26 47	3065	72 57 55	3062	71 28 59
	Regulus	E.	112 49 57	3056	111 20 54	3052	109 51 46	3049	108 22 34
19	Fomalhaut	W.	77 54 30	3373	79 17 17	3365	80 40 14	3357	82 3 20
	α Pegasi	W.	55 43 2	3297	57 7 17	3283	58 31 48	3270	59 56 35
	MARS	E.	39 55 35	2942	38 24 9	2938	36 52 38	2933	35 21 1
	Pollux	E.	64 3 13	3039	62 33 49	3035	61 4 20	3031	59 34 46
	Regulus	E.	100 55 24	3025	99 25 42	3020	97 55 54	3016	96 26 1
	JUPITER	E.	110 39 41	3067	109 10 51	3062	107 41 55	3057	106 12 53
20	Fomalhaut	W.	89 0 47	3319	90 24 37	3313	91 48 34	3307	93 12 37
	α Pegasi	W.	67 3 58	3202	68 30 5	3191	69 56 25	3181	71 22 57
	Pollux	E.	52 5 33	3005	50 35 26	3000	49 5 13	2995	47 34 54
	Regulus	E.	88 54 58	2984	87 24 25	2979	85 53 46	2973	84 23 0
	JUPITER	E.	98 46 6	3025	97 16 24	3019	95 46 35	3014	94 16 39
21	Fomalhaut	W.	100 14 3	3285	101 38 32	3282	103 3 4	3281	104 27 38
	α Pegasi	W.	78 38 20	3128	80 5 56	3119	81 33 42	3111	83 1 38
	α Arietis	W.	35 29 11	2985	36 59 42	2975	38 30 26	2965	40 1 22
	Pollux	E.	40 1 53	2968	38 31 0	2964	37 0 2	2960	35 28 59
	Regulus	E.	76 47 18	2937	75 15 46	2931	73 44 6	2924	72 12 18
	JUPITER	E.	86 45 6	2976	85 14 23	2970	83 43 33	2963	82 12 34

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.			P. L. of Diff.	XV^{h}.			P. L. of Diff.	XVIII^{h}.			P. L. of Diff.	XXI^{h}.			P. L. of Diff.
			°	′	″		°	′	″		°	′	″		°	′	″	
14	Sun	W.	120	43	52	3450	122	5	12	3456	123	26	25	3462	124	47	32	3467
	Venus	W.	87	54	21	3516	89	14	27	3521	90	34	28	3525	91	54	24	3531
	α Aquilæ	W.	57	16	8	4036	58	27	12	4010	59	38	42	3984	60	50	37	3962
	α Arietis	E.	42	35	33	3080	41	6	59	3087	39	38	34	3095	38	10	18	3102
	Aldebaran	E.	74	47	26	3117	73	19	37	3124	71	51	56	3129	70	24	22	3134
	Mars	E.	94	12	45	2977	92	42	4	2982	91	11	29	2985	89	40	58	2989
15	Venus	W.	98	32	54	3547	99	52	26	3550	101	11	55	3551	102	31	23	3553
	α Aquilæ	W.	66	55	20	3870	68	9	10	3856	69	23	14	3843	70	37	32	3830
	Aldebaran	E.	63	8	6	3160	61	41	9	3164	60	14	17	3168	58	47	30	3173
	Mars	E.	82	9	21	3001	80	39	10	3002	79	9	0	3003	77	38	51	3004
	Pollux	E.	105	25	2	3083	103	56	32	3086	102	28	5	3087	100	59	40	3088
16	Venus	W.	109	8	27	3554	110	27	52	3554	111	47	17	3553	113	6	43	3552
	α Aquilæ	W.	76	52	2	3778	78	7	27	3770	79	23	0	3763	80	38	41	3756
	Fomalhaut	W.	51	3	30	3647	52	21	14	3624	53	39	22	3603	54	57	53	3584
	Aldebaran	E.	51	34	51	3194	50	8	35	3198	48	42	24	3204	47	16	19	3208
	Mars	E.	70	8	12	3003	68	38	3	3001	67	7	52	3000	65	37	39	2999
	Pollux	E.	93	37	48	3090	92	9	26	3089	90	41	3	3089	89	12	40	3087
17	α Aquilæ	W.	86	58	43	3729	88	14	59	3726	89	31	19	3722	90	47	43	3720
	Fomalhaut	W.	61	35	25	3501	62	55	48	3488	64	16	26	3474	65	37	19	3463
	Aldebaran	E.	40	7	33	3242	38	42	14	3251	37	17	5	3262	35	52	9	3273
	Mars	E.	58	6	3	2988	56	35	35	2985	55	5	3	2981	53	34	27	2978
	Pollux	E.	81	50	17	3079	80	21	42	3076	78	53	3	3073	77	24	21	3071
18	α Aquilæ	W.	97	10	8	3716	98	26	38	3717	99	43	7	3719	100	59	34	3722
	Fomalhaut	W.	72	24	58	3408	73	47	5	3399	75	9	23	3389	76	31	52	3381
	α Pegasi	W.	50	8	57	3359	51	32	0	3342	52	55	23	3326	54	19	4	3312
	Mars	E.	46	0	22	2959	44	29	18	2955	42	58	9	2951	41	26	55	2946
	Pollux	E.	69	59	59	3055	68	30	54	3052	67	1	45	3047	65	32	31	3044
	Regulus	E.	106	53	18	3042	105	23	57	3038	103	54	31	3034	102	25	0	3030
19	Fomalhaut	W.	83	26	34	3343	84	49	56	3336	86	13	26	3330	87	37	3	3324
	α Pegasi	W.	61	21	36	3245	62	46	52	3234	64	12	21	3223	65	38	3	3212
	Mars	E.	33	49	18	2924	32	17	29	2920	30	45	35	2915	29	13	35	2909
	Pollux	E.	58	5	6	3022	56	35	21	3018	55	5	31	3014	53	35	35	3009
	Regulus	E.	94	56	1	3005	93	25	55	3001	91	55	43	2995	90	25	24	2989
	Jupiter	E.	104	43	45	3047	103	14	30	3042	101	45	9	3036	100	15	41	3030
20	Fomalhaut	W.	94	36	45	3299	96	0	58	3294	97	25	16	3291	98	49	38	3288
	α Pegasi	W.	72	49	40	3163	74	16	34	3153	75	43	39	3145	77	10	54	3136
	Pollux	E.	46	4	29	2985	44	33	58	2981	43	3	22	2977	41	32	40	2973
	Regulus	E.	82	52	7	2962	81	21	6	2956	79	49	58	2950	78	18	42	2943
	Jupiter	E.	92	46	36	3001	91	16	25	2996	89	46	7	2989	88	15	40	2983
21	Fomalhaut	W.	105	52	14	3278	107	16	51	3277	108	41	29	3277	110	6	7	3278
	α Pegasi	W.	84	29	43	3096	85	57	57	3088	87	26	21	3081	88	54	54	3073
	α Arietis	W.	41	32	29	2947	43	3	48	2939	44	35	18	2930	46	6	59	2921
	Pollux	E.	33	57	51	2953	32	26	39	2950	30	55	24	2947	29	24	5	2946
	Regulus	E.	70	40	22	2911	69	8	17	2904	67	36	3	2898	66	3	41	2891
	Jupiter	E.	80	41	27	2950	79	10	11	2943	77	38	47	2936	76	7	14	2928

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″
22	α Pegasi	W.	90 23 36	3067	91 52 26	3060	93 21 25	3053	94 50 32
	α Arietis	W.	47 38 51	2912	49 10 54	2904	50 43 8	2895	52 15 33
	Regulus	E.	64 31 10	2883	62 58 30	2876	61 25 41	2869	59 52 42
	JUPITER	E.	74 35 31	2922	73 3 40	2914	71 31 39	2907	69 59 29
	Spica	E.	118 33 17	2887	117 0 42	2880	115 27 57	2873	113 55 3
23	α Arietis	W.	60 0 23	2843	61 33 55	2835	63 7 38	2826	64 41 32
	Aldebaran	W.	29 19 34	3112	30 47 29	3077	32 16 7	3047	33 45 22
	Regulus	E.	52 5 24	2823	50 31 26	2815	48 57 18	2807	47 22 59
	JUPITER	E.	62 16 14	2861	60 43 5	2852	59 9 45	2845	57 36 15
	Spica	E.	106 8 3	2825	104 34 8	2818	103 0 3	2809	101 25 47
24	α Arietis	W.	72 34 0	2771	74 9 6	2761	75 44 25	2752	77 19 56
	Aldebaran	W.	41 19 20	2910	42 51 26	2891	44 23 56	2873	45 56 49
	Regulus	E.	39 28 41	2756	37 53 15	2747	36 17 37	2738	34 41 47
	JUPITER	E.	49 46 0	2793	48 11 23	2785	46 36 35	2775	45 1 34
	Spica	E.	93 31 38	2756	91 56 13	2747	90 20 36	2738	88 44 47
	SUN	E.	133 45 3	3143	132 17 46	3132	130 50 15	3120	129 22 30
25	α Arietis	W.	85 20 50	2692	86 57 41	2681	88 34 47	2670	90 12 7
	Aldebaran	W.	53 46 25	2780	55 21 19	2765	56 56 33	2750	58 32 6
	MARS	W.	36 11 1	2577	37 50 27	2566	39 30 9	2554	41 10 7
	Spica	E.	80 42 27	2679	79 5 19	2668	77 27 56	2657	75 50 19
	SUN	E.	122 0 17	3051	120 31 7	3039	119 1 42	3026	117 32 2
26	α Arietis	W.	98 22 30	2603	100 1 21	2592	101 40 27	2580	103 19 49
	Aldebaran	W.	66 34 25	2668	68 11 48	2655	69 49 29	2640	71 27 29
	MARS	W.	49 33 55	2485	51 15 30	2472	52 57 23	2460	54 39 32
	Spica	E.	67 38 34	2591	65 59 27	2580	64 20 4	2568	62 40 25
	SUN	E.	109 59 49	2951	108 28 35	2938	106 57 4	2924	105 25 16
27	Aldebaran	W.	79 42 3	2560	81 21 53	2547	83 2 1	2533	84 42 28
	MARS	W.	63 14 44	2385	64 58 40	2372	66 42 55	2359	68 27 29
	Pollux	W.	36 59 57	2523	38 40 38	2508	40 21 40	2493	42 3 3
	Spica	E.	54 18 0	2495	52 36 40	2483	50 55 3	2470	49 13 8
	SUN	E.	97 42 3	2843	96 8 31	2830	94 34 42	2816	93 0 35
28	Aldebaran	W.	93 9 17	2455	94 51 34	2442	96 34 9	2429	98 17 2
	MARS	W.	77 15 2	2281	79 1 30	2267	80 48 18	2254	82 35 25
	Pollux	W.	50 35 6	2406	52 18 32	2392	54 2 18	2378	55 46 24
	Spica	E.	40 39 7	2395	38 55 25	2383	37 11 26	2371	35 27 10
	SUN	E.	85 5 21	2732	83 29 23	2717	81 53 6	2703	80 16 30
29	MARS	W.	91 35 52	2176	93 24 55	2164	95 14 17	2151	97 3 58
	Pollux	W.	64 31 51	2297	66 17 55	2285	68 4 17	2271	69 50 59
	Regulus	W.	27 31 12	2287	29 17 30	2274	31 4 8	2261	32 51 5
	SUN	E.	72 8 52	2621	70 30 25	2607	68 51 40	2595	67 12 38
30	Pollux	W.	78 48 59	2200	80 37 27	2189	82 26 11	2178	84 15 11
	Regulus	W.	41 50 25	2189	43 39 9	2178	45 28 10	2168	47 17 26
	JUPITER	W.	31 10 44	2228	32 58 30	2215	34 46 35	2203	36 34 58
	SUN	E.	58 53 9	2522	57 12 26	2512	55 31 29	2501	53 50 17

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Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
22	α Pegasi	W.	96 19 48	3039	97 49 12	3034	99 18 43	3027	100 48 22	3022
	α Arietis	W.	53 48 9	2878	55 20 56	2869	56 53 54	2861	58 27 3	2852
	Regulus	E.	58 19 34	2854	56 46 16	2847	55 12 49	2839	53 39 12	2831
	JUPITER	E.	68 27 10	2892	66 54 41	2884	65 22 2	2876	63 49 13	2869
	Spica	E.	112 21 59	2857	110 48 45	2849	109 15 21	2842	107 41 47	2834
23	α Arietis	W.	66 15 38	2808	67 49 56	2799	69 24 25	2790	70 59 6	2780
	Aldebaran	W.	35 15 12	2993	36 45 33	2971	38 16 22	2950	39 47 38	2929
	Regulus	E.	45 48 30	2791	44 13 50	2782	42 38 58	2773	41 3 55	2765
	JUPITER	E.	56 2 34	2828	54 28 42	2819	52 54 39	2811	51 20 25	2802
	Spica	E.	99 51 20	2792	98 16 42	2783	96 41 52	2775	95 6 51	2766
24	α Arietis	W.	78 55 40	2732	80 31 37	2722	82 7 48	2712	83 44 12	2701
	Aldebaran	W.	47 30 3	2841	49 3 38	2825	50 37 34	2809	52 11 50	2795
	Regulus	E.	33 5 45	2719	31 29 30	2710	29 53 3	2700	28 16 23	2690
	JUPITER	E.	43 26 22	2757	41 50 58	2747	40 15 21	2738	38 39 32	2729
	Spica	E.	87 8 45	2719	85 32 31	2709	83 56 3	2699	82 19 22	2689
	SUN	E.	127 54 32	3098	126 26 20	3086	124 57 53	3074	123 29 12	3063
25	α Arietis	W.	91 49 42	2648	93 27 32	2638	95 5 36	2626	96 43 55	2615
	Aldebaran	W.	60 7 57	2723	61 44 6	2709	63 20 34	2695	64 57 20	2681
	MARS	W.	42 50 20	2532	44 30 49	2520	46 11 35	2508	47 52 37	2497
	Spica	E.	74 12 28	2636	72 34 22	2625	70 56 1	2614	69 17 25	2603
	SUN	E.	116 2 7	3001	114 31 56	2989	113 1 30	2976	111 30 47	2964
26	α Arietis	W.	104 59 28	2556	106 39 23	2544	108 19 35	2533	110 0 3	2520
	Aldebaran	W.	73 5 47	2614	74 44 23	2600	76 23 18	2587	78 2 31	2573
	MARS	W.	56 21 59	2435	58 4 44	2423	59 47 46	2410	61 31 6	2398
	Spica	E.	61 0 29	2544	59 20 17	2532	57 39 48	2520	55 59 3	2507
	SUN	E.	103 53 12	2898	102 20 51	2884	100 48 12	2871	99 15 16	2858
27	Aldebaran	W.	86 23 13	2507	88 4 16	2494	89 45 38	2481	91 27 18	2467
	MARS	W.	70 12 21	2333	71 57 32	2320	73 43 3	2307	75 28 53	2294
	Pollux	W.	43 44 46	2464	45 26 50	2449	47 9 15	2435	48 52 0	2420
	Spica	E.	47 30 55	2445	45 48 25	2433	44 5 37	2420	42 22 31	2408
	SUN	E.	91 26 9	2788	89 51 25	2773	88 16 22	2760	86 41 1	2745
28	Aldebaran	W.	100 0 12	2405	101 43 40	2393	103 27 25	2381	105 11 27	2369
	MARS	W.	84 22 52	2228	86 10 38	2215	87 58 43	2202	89 47 8	2189
	Pollux	W.	57 30 50	2350	59 15 36	2337	61 0 41	2324	62 46 6	2310
	Spica	E.	33 42 36	2347	31 57 45	2336	30 12 38	2324	28 27 14	2313
	SUN	E.	78 39 36	2675	77 2 23	2661	75 24 51	2648	73 47 1	2634
29	MARS	W.	98 53 57	2127	100 44 15	2116	102 34 50	2104	104 25 43	2093
	Pollux	W.	71 37 59	2246	73 25 18	2235	75 12 54	2223	77 0 48	2211
	Regulus	W.	34 38 21	2236	36 25 55	2223	38 13 48	2212	40 1 58	2200
	SUN	E.	65 33 18	2569	63 53 41	2557	62 13 47	2545	60 33 36	2533
30	Pollux	W.	86 4 27	2159	87 53 57	2149	89 43 42	2140	91 33 40	2132
	Regulus	W.	49 6 58	2147	50 56 45	2138	52 46 46	2130	54 37 0	2122
	JUPITER	W.	38 23 38	2180	40 12 35	2170	42 1 47	2161	43 51 14	2151
	SUN	E.	52 8 51	2482	50 27 12	2472	48 45 20	2464	47 3 16	2457

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from / Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	16 32 46.35	10.823	S.21 56 26.8	−22.51	16 16.02	70.34	10 33.58	0.963
Wed.	2	16 37 6.42	10.849	22 5 14.4	21.45	16 16.16	70.42	10 10.14	0.989
Thur.	3	16 41 27.10	10.874	22 13 36.3	20.38	16 16.30	70.50	9 46.08	1.015
Frid.	4	16 45 48.37	10.898	22 21 32.4	−19.30	16 16.44	70.58	9 21.44	1.039
Sat.	5	16 50 10.20	10.921	22 29 2.4	18.20	16 16.57	70.65	8 56.23	1.061
SUN.	6	16 54 32.56	10.942	22 36 5.9	17.09	16 16.70	70.72	8 30.50	1.082
Mon.	7	16 58 55.42	10.962	22 42 42.9	−15.98	16 16.83	70.79	8 4.27	1.103
Tues.	8	17 3 18.75	10.981	22 48 53.0	14.86	16 16.95	70.85	7 37.58	1.122
Wed.	9	17 7 42.51	10.998	22 54 36.1	13.73	16 17.07	70.91	7 10.45	1.139
Thur.	10	17 12 6.67	11.014	22 59 52.0	−12.59	16 17.18	70.96	6 42.93	1.155
Frid.	11	17 16 31.20	11.029	23 4 40.6	11.45	16 17.29	71.01	6 15.03	1.169
Sat.	12	17 20 56.07	11.042	23 9 1.6	10.30	16 17.40	71.06	5 46.80	1.182
SUN.	13	17 25 21.23	11.054	23 12 55.0	− 9.15	16 17.50	71.10	5 18.27	1.195
Mon.	14	17 29 46.68	11.065	23 16 20.6	7.99	16 17.60	71.14	4 49.46	1.206
Tues.	15	17 34 12.36	11.075	23 19 18.4	6.82	16 17.69	71.17	4 20.42	1.215
Wed.	16	17 38 38.26	11.083	23 21 48.1	− 5.66	16 17.78	71.20	3 51.16	1.223
Thur.	17	17 43 4.33	11.090	23 23 49.9	4.49	16 17.86	71.23	3 21.73	1.230
Frid.	18	17 47 30.56	11.095	23 25 23.5	3.32	16 17.94	71.25	2 52.14	1.236
Sat.	19	17 51 56.90	11.100	23 26 28.9	− 2.14	16 18.01	71.26	2 22.43	1.240
SUN.	20	17 56 23.34	11.103	23 27 6.1	− 0.96	16 18.07	71.27	1 52.64	1.243
Mon.	21	18 0 49.84	11.105	23 27 15.1	+ 0.22	16 18.12	71.28	1 22.78	1.245
Tues.	22	18 5 16.37	11.106	23 26 55.8	+ 1.39	16 18.17	71.28	0 52.88	1.246
Wed.	23	18 9 42.91	11.105	23 26 8.2	2.57	16 18.21	71.27	0 22.99	1.245
Thur.	24	18 14 9.41	11.103	23 24 52.3	3.75	16 18.25	71.26	0 6.87	1.243
Frid.	25	18 18 35.85	11.100	23 23 8.1	+ 4.93	16 18.28	71.25	0 36.67	1.240
Sat.	26	18 23 2.20	11.095	23 20 55.7	6.10	16 18.31	71.23	1 6.38	1.235
SUN.	27	18 27 28.42	11.089	23 18 15.2	7.28	16 18.33	71.21	1 35.96	1.229
Mon.	28	18 31 54.48	11.081	23 15 6.5	+ 8.45	16 18.34	71.18	2 5.38	1.222
Tues.	29	18 36 20.35	11.073	23 11 29.7	9.61	16 18.35	71.15	2 34.61	1.213
Wed.	30	18 40 45.99	11.063	23 7 25.1	10.77	16 18.36	71.12	3 3.62	1.203
Thur.	31	18 45 11.37	11.051	23 2 52.6	11.93	16 18.36	71.08	3 32.36	1.191
Frid.	32	18 49 36.44	11.038	S.22 57 52.4	+13.08	16 18.36	71.03	4 0.80	1.178

Note.—The mean time of semidiameter passing may be found by subtracting $0^{s}.19$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations **are increasing**; the sign + indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	16 32 48.26	10.820	S.21 56 30.7	−22.50	10 33.41	0.963	16 43 21.67
Wed.	2	16 37 8.25	10.846	22 5 18.0	21.44	10 9.98	0.989	16 47 18.23
Thur.	3	16 41 28.87	10.871	22 13 39.6	20.37	9 45.92	1.015	16 51 14.79
Frid.	4	16 45 50.07	10.895	22 21 35.4	−19.28	9 21.28	1.038	16 55 11.35
Sat.	5	16 50 11.83	10.918	22 29 5.1	18.18	8 56.07	1.061	16 59 7.90
SUN.	6	16 54 34.11	10.939	22 36 8.3	17.08	8 30.35	1.082	17 3 4.46
Mon.	7	16 58 56.90	10.959	22 42 45.0	−15.97	8 4.13	1.102	17 7 1.02
Tues.	8	17 3 20.14	10.978	22 48 54.9	14.85	7 37.44	1.121	17 10 57.58
Wed.	9	17 7 43.82	10.995	22 54 37.8	13.72	7 10.32	1.138	17 14 54.14
Thur.	10	17 12 7.90	11.011	22 59 53.4	−12.58	6 42.80	1.154	17 18 50.70
Frid.	11	17 16 32.34	11.026	23 4 41.8	11.44	6 14.91	1.169	17 22 47.26
Sat.	12	17 20 57.13	11.039	23 9 2.6	10.29	5 46.69	1.182	17 26 43.82
SUN.	13	17 25 22.21	11.050	23 12 55.8	− 9.14	5 18.16	1.194	17 30 40.37
Mon.	14	17 29 47.56	11.061	23 16 21.2	7.98	4 49.37	1.205	17 34 36.93
Tues.	15	17 34 13.16	11.071	23 19 18.8	6.82	4 20.33	1.214	17 38 33.49
Wed.	16	17 38 38.96	11.079	23 21 48.5	− 5.65	3 51.09	1.222	17 42 30.05
Thur.	17	17 43 4.95	11.086	23 23 50.1	4.48	3 21.66	1.229	17 46 26.61
Frid.	18	17 47 31.08	11.092	23 25 23.6	3.31	2 52.08	1.235	17 50 23.17
Sat.	19	17 51 57.34	11.096	23 26 29.0	− 2.14	2 22.38	1.239	17 54 19.73
SUN.	20	17 56 23.69	11.099	23 27 6.2	− 0.96	1 52.60	1.242	17 58 16.29
Mon.	21	18 0 50.10	11.101	23 27 15.1	+ 0.22	1 22.75	1.244	18 2 12.84
Tues.	22	18 5 16.54	11.102	23 26 55.8	+ 1.39	0 52.87	1.244	18 6 9.40
Wed.	23	18 9 42.98	11.101	23 26 8.2	2.57	0 22.99	1.244	18 10 5.96
Thur.	24	18 14 9.38	11.099	23 24 52.3	3.75	0 6.86	1.242	18 14 2.52
Frid.	25	18 18 35.73	11.095	23 23 8.2	+ 4.93	0 36.65	1.239	18 17 59.08
Sat.	26	18 23 1.99	11.091	23 20 55.8	6.10	1 6.35	1.235	18 21 55.64
SUN.	27	18 27 28.12	11.086	23 18 15.4	7.27	1 35.92	1.229	18 25 52.20
Mon.	28	18 31 54.09	11.078	23 15 6.8	+ 8.44	2 5.34	1.222	18 29 48.76
Tues.	29	18 36 19.87	11.069	23 11 30.2	9.61	2 34.56	1.213	18 33 45.31
Wed.	30	18 40 45.42	11.059	23 7 25.6	10.77	3 3.55	1.203	18 37 41.87
Thur.	31	18 45 10.72	11.048	23 2 53.3	11.93	3 32.28	1.191	18 41 38.43
Frid.	32	18 49 35.70	11.034	S.22 57 53.3	+13.08	4 0.71	1.178	18 45 34.99

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are **increasing**; the sign + indicates that south declinations are decreasing.

Diff. for 1 Hour.
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	336	249 51 27.0	50 30.5	152.22	— 0.56	9.9937168	–26.6	7 15 26.80
2	337	250 52 20.8	51 24.1	152.27	0.60	9.9936536	26.1	7 11 30.88
3	338	251 53 15.8	52 18.9	152.32	0.60	9.9935917	25.5	7 7 34.97
4	339	252 54 12.1	53 15.1	152.37	— 0.58	9.9935312	–24.9	7 3 39.06
5	340	253 55 9.4	54 12.2	152.41	0.53	9.9934722	24.3	6 59 43.15
6	341	254 56 7.6	55 10.2	152.44	0.44	9.9934144	23.7	6 55 47.23
7	342	255 57 6.7	56 9.1	152.47	— 0.34	9.9933582	–23.1	6 51 51.32
8	343	256 58 6.5	57 8.7	152.51	0.22	9.9933034	22.5	6 47 55.41
9	344	257 59 7.0	58 9.1	152.54	— 0.10	9.9932502	21.8	6 43 59.50
10	345	258 60 8.2	59 10.1	152.56	+ 0.03	9.9931987	–21.1	6 40 3.58
11	346	260 1 9.9	0 11.6	152.58	0.15	9.9931492	20.3	6 36 7.67
12	347	261 2 12.1	1 13.6	152.60	0.26	9.9931014	19.4	6 32 11.76
13	348	262 3 14.6	2 15.9	152.61	+ 0.35	9.9930560	–18.5	6 28 15.84
14	349	263 4 17.6	3 18.7	152.63	0.43	9.9930127	17.5	6 24 19.93
15	350	264 5 21.0	4 21.9	152.65	0.47	9.9929718	16.5	6 20 24.02
16	351	265 6 24.8	5 25.5	152.67	+ 0.49	9.9929335	–15.4	6 16 28.11
17	352	266 7 29.0	6 29.5	152.68	0.47	9.9928978	14.3	6 12 32.19
18	353	267 8 33.6	7 33.9	152.70	0.42	9.9928649	13.2	6 8 36.28
19	354	268 9 38.6	8 38.7	152.72	+ 0.35	9.9928346	–12.0	6 4 40.37
20	355	269 10 44.2	9 44.1	152.74	0.26	9.9928071	10.9	6 0 44.45
21	356	270 11 50.1	10 49.8	152.76	+ 0.14	9.9927825	9.7	5 56 48.54
22	357	271 12 56.7	11 56.2	152.78	0.00	9.9927607	– 8.5	5 52 52.63
23	358	272 14 3.7	13 3.0	152.81	— 0.13	9.9927417	7.4	5 48 56.72
24	359	273 15 11.2	14 10.3	152.83	0.26	9.9927253	6.3	5 45 0.80
25	360	274 16 19.3	15 18.2	152.85	— 0.39	9.9927114	– 5.3	5 41 4.89
26	361	275 17 28.0	16 26.7	152.87	0.50	9.9927000	4.3	5 37 8.98
27	362	276 18 37.2	17 35.7	152.89	0.59	9.9926909	3.3	5 33 13.06
28	363	277 19 46.8	18 45.1	152.91	— 0.66	9.9926843	– 2.4	5 29 17.15
29	364	278 20 57.0	19 55.1	152.93	0.71	9.9926795	1.6	5 25 21.24
30	365	279 22 7.4	21 5.3	152.94	0.72	9.9926767	– 0.8	5 21 25.33
31	366	280 23 18.2	22 15.9	152.95	— 0.69	9.9926759	0.0	5 17 29.41
32	367	281 24 29.2	23 26.7	152.96	— 0.64	9.9926767	+ 0.7	5 13 33.50

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $1^d.0$.

Diff. for 1 Hour, —$9^s.8296$. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 29.2	16 32.0	60 24.0	+0.98	60 34.2	+0.71	21 28.9	2.39	26.2
2	16 33.9	16 34.6	60 41.0	+0.40	60 43.8	+0.07	22 28.5	2.57	27.2
3	16 34.3	16 32.8	60 42.6	−0.28	60 37.2	−0.63	23 31.9	2.69	28.2
4	16 30.2	16 26.5	60 27.6	−0.96	60 14.1	−1.28	☌		29.2
5	16 21.8	16 16.3	59 56.9	1.56	59 36.6	1.80	0 36.7	2.68	0.8
6	16 10.1	16 3.2	59 13.6	2.00	58 48.5	2.15	1 39.7	2.55	1.8
7	15 56.0	15 48.7	58 22.1	−2.23	57 55.0	−2.27	2 38.3	2.33	2.8
8	15 41.2	15 33.9	57 27.7	2.26	57 0.8	2.20	3 31.5	2.10	3.8
9	15 26.8	15 20.1	56 34.8	2.11	56 10.1	1.98	4 19.6	1.91	4.8
10	15 13.9	15 8.1	55 47.2	−1.83	55 26.2	−1.65	5 3.6	1.77	5.8
11	15 3.0	14 58.6	55 7.5	1.46	54 51.2	1.25	5 45.0	1.69	6.8
12	14 54.9	14 51.8	54 37.4	1.04	54 26.2	0.83	6 24.9	1.65	7.8
13	14 49.4	14 47.8	54 17.5	−0.62	54 11.4	−0.40	7 4.7	1.67	8.8
14	14 46.8	14 46.5	54 7.8	−0.20	54 6.7	0.00	7 45.5	1.74	9.8
15	14 46.8	14 47.7	54 7.8	+0.18	54 11.0	+0.35	8 28.3	1.84	10.8
16	14 49.1	14 51.0	54 16.2	+0.51	54 23.2	+0.65	9 13.9	1.97	11.8
17	14 53.3	14 56.1	54 31.8	0.78	54 41.8	0.88	10 2.7	2.10	12.8
18	14 59.1	15 2.4	54 53.0	0.97	55 5.1	1.05	10 54.5	2.21	13.8
19	15 5.9	15 9.6	55 18.1	+1.11	55 31.7	+1.15	11 48.4	2.27	14.8
20	15 13.5	15 17.4	55 45.8	1.18	56 0.1	1.20	12 42.9	2.26	15.8
21	15 21.3	15 25.3	56 14.6	1.21	56 29.2	1.21	13 36.5	2.20	16.8
22	15 29.2	15 33.2	56 43.7	+1.21	56 58.2	+1.20	14 28.1	2.10	17.8
23	15 37.1	15 41.0	57 12.6	1.19	57 26.8	1.18	15 17.4	2.01	18.8
24	15 44.8	15 48.6	57 40.9	1.16	57 54.7	1.15	16 4.9	1.95	19.8
25	15 52.3	15 56.0	58 8.4	+1.13	58 21.8	+1.10	16 51.5	1.94	20.8
26	15 59.5	16 2.9	58 34.9	1.07	58 47.5	1.03	17 38.4	1.98	21.8
27	16 6.2	16 9.3	58 59.6	0.98	59 10.9	0.90	18 27.0	2.08	22.8
28	16 12.1	16 14.6	59 21.2	+0.81	59 30.3	+0.70	19 18.6	2.23	23.8
29	16 16.7	16 18.3	59 37.9	0.56	59 43.7	0.40	20 14.3	2.41	24.8
30	16 19.3	16 19.6	59 47.4	+0.21	59 48.8	+0.01	21 14.1	2.57	25.8
31	16 19.3	16 18.2	59 47.6	−0.22	59 43.6	−0.45	22 16.9	2.65	26.8
32	16 16.4	16 13.7	59 36.8	−0.69	59 27.1	−0.93	23 20.2	2.60	27.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 1.					**THURSDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 24 27.67	2.3156	S.13 52 38.5	14.915	0	15 23 30.71	2.6411	S.23 46 22.9	9.035
1	13 26 46.80	2.3221	14 7 31.2	14.841	1	15 26 9.35	2.6469	23 55 19.9	8.864
2	13 29 6.32	2.3286	14 22 19.4	14.765	2	15 28 48.34	2.6526	24 4 6.6	8.692
3	13 31 26.23	2.3351	14 37 3.0	14.687	3	15 31 27.66	2.6581	24 12 42.9	8.518
4	13 33 46.53	2.3417	14 51 41.9	14.607	4	15 34 7.31	2.6636	24 21 8.7	8.343
5	13 36 7.23	2.3483	15 6 15.9	14.525	5	15 36 47.29	2.6689	24 29 24.0	8.166
6	13 38 28.33	2.3551	15 20 44.9	14.441	6	15 39 27.58	2.6741	24 37 28.6	7.987
7	13 40 49.84	2.3618	15 35 8.8	14.355	7	15 42 8.18	2.6792	24 45 22.4	7.807
8	13 43 11.75	2.3686	15 49 27.5	14.267	8	15 44 49.08	2.6842	24 53 5.4	7.625
9	13 45 34.07	2.3754	16 3 40.9	14.177	9	15 47 30.28	2.6890	25 0 37.4	7.442
10	13 47 56.80	2.3823	16 17 48.8	14.084	10	15 50 11.76	2.6936	25 7 58.4	7.257
11	13 50 19.94	2.3892	16 31 51.0	13.989	11	15 52 53.51	2.6980	25 15 8.3	7.072
12	13 52 43.50	2.3962	16 45 47.5	13.892	12	15 55 35.52	2.7023	25 22 7.0	6.885
13	13 55 7.48	2.4032	16 59 38.1	13.794	13	15 58 17.79	2.7066	25 28 54.5	6.697
14	13 57 31.88	2.4101	17 13 22.8	13.694	14	16 1 0.31	2.7107	25 35 30.6	6.507
15	13 59 56.69	2.4170	17 27 1.4	13.591	15	16 3 43.07	2.7146	25 41 55.3	6.317
16	14 2 21.92	2.4241	17 40 33.7	13.485	16	16 6 26.06	2.7183	25 48 8.6	6.125
17	14 4 47.58	2.4312	17 53 59.6	13.378	17	16 9 9.27	2.7218	25 54 10.3	5.932
18	14 7 13.67	2.4383	18 7 19.1	13.269	18	16 11 52.68	2.7252	26 0 0.4	5.738
19	14 9 40.18	2.4454	18 20 31.9	13.157	19	16 14 36.29	2.7284	26 5 38.8	5.543
20	14 12 7.12	2.4525	18 33 38.0	13.044	20	16 17 20.09	2.7315	26 11 5.5	5.348
21	14 14 34.48	2.4596	18 46 37.2	12.928	21	16 20 4.07	2.7343	26 16 20.5	5.152
22	14 17 2.27	2.4667	18 59 29.4	12.811	22	16 22 48.21	2.7369	26 21 23.7	4.954
23	14 19 30.49	2.4738	S.19 12 14.5	12.691	23	16 25 32.50	2.7394	S.26 26 15.0	4.755
	WEDNESDAY 2.					**FRIDAY 4.**			
0	14 21 59.13	2.4809	S.19 24 52.3	12.569	0	16 28 16.94	2.7416	S.26 30 54.3	4.556
1	14 24 28.20	2.4881	19 37 22.8	12.445	1	16 31 1.51	2.7438	26 35 21.7	4.357
2	14 26 57.70	2.4952	19 49 45.7	12.318	2	16 33 46.20	2.7457	26 39 37.1	4.157
3	14 29 27.62	2.5023	20 2 1.0	12.190	3	16 36 31.00	2.7474	26 43 40.5	3.956
4	14 31 57.97	2.5093	20 14 8.5	12.060	4	16 39 15.89	2.7489	26 47 31.8	3.754
5	14 34 28.74	2.5164	20 26 8.2	11.928	5	16 42 0.87	2.7502	26 51 11.0	3.552
6	14 36 59.94	2.5235	20 37 59.9	11.793	6	16 44 45.92	2.7513	26 54 38.0	3.349
7	14 39 31.56	2.5305	20 49 43.4	11.657	7	16 47 31.03	2.7522	26 57 52.9	3.147
8	14 42 3.60	2.5374	21 1 18.7	11.518	8	16 50 16 19	2.7530	27 0 55.6	2.944
9	14 44 36.05	2.5443	21 12 45.6	11.377	9	16 53 1.39	2.7535	27 3 46.2	2.741
10	14 47 8.92	2.5512	21 24 4.0	11.234	10	16 55 46.61	2.7537	27 6 24.6	2.537
11	14 49 42.20	2.5580	21 35 13.7	11.089	11	16 58 31.84	2.7538	27 8 50.7	2.333
12	14 52 15.88	2.5648	21 46 14.7	10.942	12	17 1 17.07	2.7537	27 11 4.6	2.130
13	14 54 49.97	2.5716	21 57 6.8	10.794	13	17 4 2.29	2.7534	27 13 6.3	1.927
14	14 57 24.47	2.5783	22 7 50.0	10.644	14	17 6 47.48	2.7528	27 14 55.8	1.722
15	14 59 59.37	2.5849	22 18 24.1	10.492	15	17 9 32.63	2.7521	27 16 33.0	1.519
16	15 2 34.66	2.5914	22 28 49.0	10.337	16	17 12 17.73	2.7511	27 17 58.0	1.316
17	15 5 10.34	2.5980	22 39 4.5	10.180	17	17 15 2.76	2.7499	27 19 10.9	1.113
18	15 7 46.42	2.6045	22 49 10.6	10.022	18	17 17 47.72	2.7486	27 20 11.6	0.910
19	15 10 22.88	2.6107	22 59 7.2	9.862	19	17 20 32.59	2.7470	27 21 0.1	0.707
20	15 12 59.71	2.6169	23 8 54.1	9.700	20	17 23 17.36	2.7452	27 21 36.4	0.504
21	15 15 36.91	2.6231	23 18 31.2	9.536	21	17 26 2.01	2.7432	27 22 0.6	0.303
22	15 18 14.48	2.6292	23 27 58.4	9.371	22	17 28 46.54	2.7410	27 22 12.8	− 0.101
23	15 20 52.42	2.6352	23 37 15.7	9.204	23	17 31 30.93	2.7387	27 22 12.8	+ 0.101
24	15 23 30.71	2.6411	S.23 46 22.9	9.035	24	17 34 15.18	2.7361	S.27 22 0.7	0.302

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.

Right cension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
m s	s	° ′ ″	″
34 15.18	2.7361	S.27 22 0.7	0.302
36 59.26	2.7332	27 21 36.6	0.501
39 43.17	2.7302	27 21 0.6	0.699
42 26.89	2.7270	27 20 12.7	0.898
45 10.41	2.7236	27 19 12.9	1.096
47 53.72	2.7200	27 18 1.2	1.293
50 36.81	2.7162	27 16 37.8	1.488
53 19.67	2.7122	27 15 2.7	1.683
56 2.28	2.7081	27 13 15.8	1.878
58 44.64	2.7037	27 11 17.3	2.072
1 26.73	2.6992	27 9 7.2	2.264
4 8.54	2.6945	27 6 45.6	2.455
6 50.07	2.6897	27 4 12.6	2.645
9 31.30	2.6846	27 1 28.2	2.834
12 12.22	2.6794	26 58 32.5	3.022
14 52.83	2.6741	26 55 25.6	3.208
17 33.11	2.6685	26 52 7.5	3.393
20 13.05	2.6627	26 48 38.4	3.577
22 52.64	2.6569	26 44 58.3	3.759
25 31.88	2.6510	26 41 7.3	3.941
28 10.76	2.6448	26 37 5.4	4.121
30 49.26	2.6385	26 32 52.8	4.299
33 27.38	2.6321	26 28 29.5	4.477
36 5.11	2.6256	S.26 23 55.6	4.652

SUNDAY 6.

Right cension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
38 42.45	2.6189	S.26 19 11.3	4.825
41 19.38	2.6121	26 14 16.6	4.997
43 55.90	2.6052	26 9 11.6	5.168
46 32.00	2.5981	26 3 56.4	5.337
49 7.67	2.5909	25 58 31.1	5.505
51 42.91	2.5837	25 52 55.8	5.670
54 17.71	2.5763	25 47 10.7	5.833
56 52.07	2.5688	25 41 15.8	5.996
59 25.97	2.5612	25 35 11.1	6.158
1 59.41	2.5535	25 28 56.8	6.317
4 32.39	2.5458	25 22 33.1	6.473
7 4.90	2.5380	25 16 0.0	6.629
9 36.95	2.5302	25 9 17.6	6.783
12 8.52	2.5221	25 2 26.0	6.935
14 39.60	2.5140	24 55 25.4	7.085
17 10.20	2.5059	24 48 15.8	7.233
19 40.31	2.4977	24 40 57.4	7.380
22 9.92	2.4894	24 33 30.2	7.525
24 39.04	2.4811	24 25 54.4	7.667
27 7.66	2.4728	24 18 10.1	7.808
29 35.78	2.4644	24 10 17.4	7.947
32 3.39	2.4559	24 2 16.4	8.085
34 30.49	2.4474	23 54 7.2	8.221
36 57.08	2.4390	23 45 49.9	8.354
39 23.17	2.4305	S.23 37 24.7	8.486

MONDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 39 23.17	2.4305	S.23 37 24.7	8.486
1	19 41 48.74	2.4218	23 28 51.6	8.616
2	19 44 13.79	2.4132	23 20 10.8	8.743
3	19 46 38.33	2.4047	23 11 22.4	8.870
4	19 49 2.35	2.3961	23 2 26.4	8.994
5	19 51 25.86	2.3875	22 53 23.1	9.116
6	19 53 48.85	2.3788	22 44 12.5	9.237
7	19 56 11.32	2.3702	22 34 54.7	9.355
8	19 58 33.27	2.3615	22 25 29.9	9.472
9	20 0 54.70	2.3528	22 15 58.1	9.587
10	20 3 15.61	2.3442	22 6 19.4	9.701
11	20 5 36.01	2.3357	21 56 34.0	9.812
12	20 7 55.89	2.3270	21 46 42.0	9.921
13	20 10 15.25	2.3184	21 36 43.5	10.028
14	20 12 34.10	2.3098	21 26 38.6	10.135
15	20 14 52.43	2.3012	21 16 27.3	10.239
16	20 17 10.25	2.2927	21 6 9.9	10.341
17	20 19 27.55	2.2841	20 55 46.4	10.442
18	20 21 44.34	2.2756	20 45 16.9	10.540
19	20 24 0.62	2.2672	20 34 41.6	10.637
20	20 26 16.40	2.2587	20 24 0.5	10.732
21	20 28 31.67	2.2503	20 13 13.7	10.826
22	20 30 46.44	2.2420	20 2 21.4	10.917
23	20 33 0.71	2.2337	S.19 51 23.6	11.007

TUESDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 35 14.49	2.2255	S.19 40 20.5	11.096
1	20 37 27.77	2.2172	19 29 12.1	11.182
2	20 39 40.56	2.2090	19 17 58.6	11.267
3	20 41 52.85	2.2008	19 6 40.0	11.351
4	20 44 4.65	2.1928	18 55 16.5	11.432
5	20 46 15.98	2.1848	18 43 48.1	11.512
6	20 48 26.83	2.1768	18 32 15.0	11.591
7	20 50 37.20	2.1689	18 20 37.2	11.668
8	20 52 47.10	2.1610	18 8 54.8	11.743
9	20 54 56.52	2.1531	17 57 8.0	11.817
10	20 57 5.47	2.1454	17 45 16.8	11.889
11	20 59 13.97	2.1378	17 33 21.3	11.960
12	21 1 22.01	2.1302	17 21 21.6	12.029
13	21 3 29.59	2.1226	17 9 17.8	12.097
14	21 5 36.72	2.1151	16 57 10.0	12.163
15	21 7 43.40	2.1077	16 44 58.3	12.227
16	21 9 49.64	2.1003	16 32 42.8	12.290
17	21 11 55.44	2.0931	16 20 23.5	12.352
18	21 14 0.81	2.0859	16 8 0.6	12.412
19	21 16 5.75	2.0787	15 55 34.1	12.471
20	21 18 10.26	2.0716	15 43 4.1	12.528
21	21 20 14.34	2.0646	15 30 30.7	12.584
22	21 22 18.01	2.0577	15 17 54.0	12.638
23	21 24 21.27	2.0509	15 5 14.1	12.692
24	21 26 24.12	2.0441	S.14 52 31.0	12.744

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 9.					FRIDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 26 24.12	2.0441	S. 14 52 31.0	12.744	0	22 58 17.42	1.8173	S. 4 3 7.7	13.929
1	21 28 26.56	2.0374	14 39 44.8	12.795	1	23 0 6.38	1.8146	3 49 11.9	13.931
2	21 30 28.61	2.0308	14 26 55.6	12.843	2	23 1 55.18	1.8120	3 35 16.0	13.933
3	21 32 30.26	2.0242	14 14 3.6	12.890	3	23 3 43.82	1.8095	3 21 20.0	13.934
4	21 34 31.52	2.0178	14 1 8.8	12.937	4	23 5 32.32	1.8072	3 7 23.9	13.934
5	21 36 32.40	2.0115	13 48 11.1	12.984	5	23 7 20.68	1.8049	2 53 27.9	13.933
6	21 38 32.90	2.0052	13 35 10.7	13.028	6	23 9 8.91	1.8027	2 39 32.0	13.931
7	21 40 33.02	1.9989	13 22 7.7	13.071	7	23 10 57.01	1.8006	2 25 36.2	13.929
8	21 42 32.77	1.9928	13 9 2.2	13.112	8	23 12 44.98	1.7985	2 11 40.5	13.927
9	21 44 32.16	1.9868	12 55 54.3	13.152	9	23 14 32.82	1.7964	1 57 45.0	13.923
10	21 46 31.19	1.9808	12 42 44.0	13.192	10	23 16 20.55	1.7946	1 43 49.7	13.919
11	21 48 29.86	1.9748	12 29 31.3	13.231	11	23 18 8.17	1.7929	1 29 54.7	13.914
12	21 50 28.17	1.9690	12 16 16.3	13.268	12	23 19 55.69	1.7912	1 16 0.0	13.908
13	21 52 26.14	1.9634	12 2 59.1	13.303	13	23 21 43.11	1.7895	1 2 5.7	13.902
14	21 54 23.78	1.9578	11 49 39.9	13.337	14	23 23 30.43	1.7878	0 48 11.8	13.895
15	21 56 21.08	1.9523	11 36 18.7	13.370	15	23 25 17.65	1.7863	0 34 18.3	13.887
16	21 58 18.05	1.9468	11 22 55.5	13.403	16	23 27 4.78	1.7849	0 20 25.3	13.879
17	22 0 14.70	1.9414	11 9 30.3	13.435	17	23 28 51.84	1.7836	S. 0 6 32.8	13.870
18	22 2 11.02	1.9361	10 56 3.3	13.465	18	23 30 38.82	1.7824	N. 0 7 19.1	13.860
19	22 4 7.03	1.9309	10 42 34.5	13.494	19	23 32 25.73	1.7812	0 21 10.4	13.849
20	22 6 2.73	1.9257	10 29 4.0	13.522	20	23 34 12.57	1.7802	0 35 1.0	13.838
21	22 7 58.12	1.9207	10 15 31.8	13.550	21	23 35 59.35	1.7792	0 48 51.0	13.827
22	22 9 53.21	1.9158	10 1 58.0	13.576	22	23 37 46.07	1.7782	1 2 40.3	13.815
23	22 11 48.01	1.9110	S. 9 48 22.7	13.600	23	23 39 32.74	1.7773	N. 1 16 28.8	13.802
	THURSDAY 10.					SATURDAY 12.			
0	22 13 42.53	1.9062	S. 9 34 46.0	13.624	0	23 41 19.35	1.7765	N. 1 30 16.5	13.788
1	22 15 36.76	1.9015	9 21 7.8	13.647	1	23 43 5.92	1.7759	1 44 3.3	13.774
2	22 17 30.71	1.8968	9 7 28.3	13.669	2	23 44 52.46	1.7753	1 57 49.3	13.759
3	22 19 24.38	1.8923	8 53 47.5	13.690	3	23 46 38.96	1.7747	2 11 34.4	13.743
4	22 21 17.78	1.8879	8 40 5.5	13.711	4	23 48 25.43	1.7743	2 25 18.5	13.727
5	22 23 10.92	1.8836	8 26 22.2	13.731	5	23 50 11.88	1.7740	2 39 1.6	13.710
6	22 25 3.81	1.8793	8 12 37.8	13.749	6	23 51 58.31	1.7737	2 52 43.7	13.692
7	22 26 56.44	1.8751	7 58 52.4	13.766	7	23 53 44.72	1.7734	3 6 24.7	13.674
8	22 28 48.82	1.8710	7 45 5.9	13.782	8	23 55 31.12	1.7733	3 20 4.6	13.656
9	22 30 40.96	1.8670	7 31 18.5	13.797	9	23 57 17.52	1.7733	3 33 43.4	13.637
10	22 32 32.86	1.8631	7 17 30.2	13.812	10	23 59 3.91	1.7733	3 47 21.0	13.616
11	22 34 24.53	1.8593	7 3 41.0	13.826	11	0 0 50.31	1.7734	4 0 57.3	13.595
12	22 36 15.97	1.8555	6 49 51.1	13.839	12	0 2 36.72	1.7736	4 14 32.4	13.574
13	22 38 7.19	1.8518	6 36 0.4	13.851	13	0 4 23.14	1.7738	4 28 6.2	13.552
14	22 39 58.19	1.8482	6 22 9.0	13.862	14	0 6 9.58	1.7741	4 41 38.6	13.529
15	22 41 48.98	1.8448	6 8 17.0	13.872	15	0 7 56.03	1.7744	4 55 9.7	13.507
16	22 43 39.57	1.8415	5 54 24.4	13.882	16	0 9 42.51	1.7749	5 8 39.4	13.483
17	22 45 29.96	1.8381	5 40 31.2	13.891	17	0 11 29.02	1.7755	5 22 7.6	13.458
18	22 47 20.14	1.8349	5 26 37.5	13.898	18	0 13 15.57	1.7762	5 35 34.3	13.433
19	22 49 10.13	1.8317	5 12 43.4	13.905	19	0 15 2.16	1.7768	5 48 59.5	13.407
20	22 50 59.94	1.8287	4 58 48.9	13.912	20	0 16 48.79	1.7775	6 2 23.1	13.380
21	22 52 49.57	1.8257	4 44 54.0	13.917	21	0 18 35.46	1.7784	6 15 45.1	13.352
22	22 54 39.02	1.8228	4 30 58.8	13.922	22	0 20 22.19	1.7793	6 29 5.4	13.325
23	22 56 28.30	1.8200	4 17 3.4	13.926	23	0 22 8.98	1.7802	6 42 24.1	13.297
24	22 58 17.42	1.8173	S. 4 3 7.7	13.929	24	0 23 55.82	1.7813	N. 6 55 41.1	13.268

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 13.					TUESDAY 15.			
h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0 23 55.82	1.7813	N. 6 55 41.1	13.268	0	1 51 57.12	1.9106	N.16 46 22.7	11.067
0 25 42.73	1.7825	7 8 56.3	13.238	1	1 53 51.88	1.9147	16 57 24.8	11.003
0 27 29.72	1.7837	7 22 9.7	13.208	2	1 55 46.88	1.9188	17 8 23.1	10.938
0 29 16.78	1.7849	7 35 21.3	13.177	3	1 57 42.13	1.9230	17 19 17.4	10.872
0 31 3.91	1.7863	7 48 31.0	13.146	4	1 59 37.64	1.9272	17 30 7.7	10.805
0 32 51.13	1.7878	8 1 38.8	13.114	5	2 1 33.40	1.9315	17 40 54.0	10.737
0 34 38.44	1.7893	8 14 44.7	13.082	6	2 3 29.42	1.9358	17 51 36.1	10.668
0 36 25.84	1.7908	8 27 48.6	13.048	7	2 5 25.70	1.9402	18 2 14.1	10.599
0 38 13.33	1.7924	8 40 50.4	13.013	8	2 7 22.25	1.9447	18 12 48.0	10.529
0 40 0.92	1.7941	8 53 50.1	12.978	9	2 9 19.07	1.9492	18 23 17.6	10.457
0 41 48.62	1.7959	9 6 47.7	12.943	10	2 11 16.16	1.9537	18 33 42.9	10.385
0 43 36.43	1.7977	9 19 43.2	12.907	11	2 13 13.52	1.9583	18 44 3.8	10.312
0 45 24.34	1.7995	9 32 36.5	12.869	12	2 15 11.16	1.9630	18 54 20.3	10.238
0 47 12.37	1.8016	9 45 27.5	12.832	13	2 17 9.08	1.9676	19 4 32.3	10.163
0 49 0.53	1.8037	9 58 16.3	12.794	14	2 19 7.27	1.9722	19 14 39.9	10.088
0 50 48.81	1.8057	10 11 2.8	12.755	15	2 21 5.74	1.9769	19 24 42.9	10.011
0 52 37.21	1.8079	10 23 46.9	12.715	16	2 23 4.50	1.9817	19 34 41.2	9.933
0 54 25.75	1.8102	10 36 28.6	12.676	17	2 25 3.55	1.9865	19 44 34.9	9.855
0 56 14.43	1.8125	10 49 8.0	12.636	18	2 27 2.88	1.9913	19 54 23.8	9.776
0 58 3.25	1.8148	11 1 44.9	12.594	19	2 29 2.50	1.9962	20 4 8.0	9.696
0 59 52.21	1.8172	11 14 19.2	12.551	20	2 31 2.42	2.0011	20 13 47.3	9.614
1 1 41.32	1.8197	11 26 51.0	12.508	21	2 33 2.63	2.0059	20 23 21.7	9.532
1 3 30.58	1.8223	11 39 20.2	12.464	22	2 35 3.13	2.0108	20 32 51.2	9.449
1 5 20.00	1.8250	N.11 51 46.7	12.419	23	2 37 3.93	2.0157	N.20 42 15.6	9.364
MONDAY 14.					WEDNESDAY 16.			
1 7 9.58	1.8277	N.12 4 10.5	12.374	0	2 39 5.02	2.0207	N.20 51 34.9	9.279
1 8 59.33	1.8305	12 16 31.6	12.328	1	2 41 6.41	2.0257	21 0 49.1	9.194
1 10 49.24	1.8333	12 28 49.9	12.282	2	2 43 8.10	2.0307	21 9 58.2	9.107
1 12 39.32	1.8362	12 41 5.5	12.236	3	2 45 10.10	2.0358	21 19 2.0	9.019
1 14 29.58	1.8392	12 53 18.2	12.187	4	2 47 12.40	2.0408	21 28 0.5	8.931
1 16 20.02	1.8422	13 5 28.0	12.138	5	2 49 15.00	2.0459	21 36 53.7	8.842
1 18 10.64	1.8453	13 17 34.8	12.089	6	2 51 17.91	2.0510	21 45 41.5	8.751
1 20 1.45	1.8484	13 29 38.7	12.040	7	2 53 21.12	2.0561	21 54 23.8	8.659
1 21 52.45	1.8516	13 41 39.6	11.988	8	2 55 24.64	2.0612	22 3 0.6	8.566
1 23 43.64	1.8548	13 53 37.3	11.936	9	2 57 28.46	2.0663	22 11 31.7	8.472
1 25 35.03	1.8582	14 5 31.9	11.884	10	2 59 32.59	2.0714	22 19 57.2	8.377
1 27 26.62	1.8616	14 17 23.3	11.831	11	3 1 37.03	2.0766	22 28 17.0	8.282
1 29 18.42	1.8650	14 29 11.6	11.777	12	3 3 41.78	2.0817	22 36 31.0	8.185
1 31 10.42	1.8684	14 40 56.6	11.722	13	3 5 46.84	2.0869	22 44 39.2	8.088
1 33 2.63	1.8720	14 52 38.3	11.667	14	3 7 52.21	2.0920	22 52 41.6	7.990
1 34 55.06	1.8757	15 4 16.6	11.610	15	3 9 57.88	2.0971	23 0 38.0	7.890
1 36 47.71	1.8793	15 15 51.5	11.553	16	3 12 3.86	2.1023	23 8 28.4	7.789
1 38 40.58	1.8830	15 27 23.0	11.496	17	3 14 10.15	2.1075	23 16 12.7	7.688
1 40 33.67	1.8868	15 38 51.0	11.437	18	3 16 16.76	2.1127	23 23 51.0	7.587
1 42 26.99	1.8906	15 50 15.4	11.377	19	3 18 23.67	2.1178	23 31 23.1	7.483
1 44 20.54	1.8945	16 1 36.3	11.317	20	3 20 30.89	2.1229	23 38 48.9	7.378
1 46 14.33	1.8984	16 12 53.5	11.256	21	3 22 38.42	2.1281	23 46 8.5	7.273
1 48 8.35	1.9023	16 24 7.0	11.194	22	3 24 46.26	2.1332	23 53 21.7	7.167
1 50 2.61	1.9064	16 35 16.8	11.131	23	3 26 54.40	2.1382	24 0 28.5	7.060
1 51 57.12	1.9106	N.16 46 22.7	11.067	24	3 29 2.85	2.1433	N.24 7 28.9	6.952

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 17.					SATURDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 29 2.85	2.1433	N.24 7 28.9	6.952	0	5 17 2.60	2.3327	N.27 19 38.2	0.758
1	3 31 11.60	2.1484	24 14 22.8	6.843	1	5 19 22.63	2.3348	27 20 19.3	0.612
2	3 33 20.66	2.1535	24 21 10.1	6.733	2	5 21 42.78	2.3368	27 20 51.6	0.465
3	3 35 30.02	2.1585	24 27 50.7	6.622	3	5 24 3.05	2.3387	27 21 15.1	0.319
4	3 37 39.68	2.1635	24 34 24.7	6.510	4	5 26 23.43	2.3405	27 21 29.9	0.173
5	3 39 49.64	2.1685	24 40 51.9	6.397	5	5 28 43.91	2.3423	27 21 35.9	+ 0.027
6	3 41 59.90	2.1734	24 47 12.3	6.283	6	5 31 4.50	2.3439	27 21 33.1	− 0.121
7	3 44 10.45	2.1783	24 53 25.9	6.168	7	5 33 25.18	2.3453	27 21 21.4	0.268
8	3 46 21.30	2.1832	24 59 32.5	6.052	8	5 35 45.94	2.3467	27 21 0.9	0.415
9	3 48 32.44	2.1881	25 5 32.1	5.935	9	5 38 6.78	2.3480	27 20 31.6	0.563
10	3 50 43.87	2.1929	25 11 24.7	5.818	10	5 40 27.70	2.3492	27 19 53.4	0.711
11	3 52 55.59	2.1977	25 17 10.3	5.700	11	5 42 48.69	2.3503	27 19 6.3	0.859
12	3 55 7.60	2.2025	25 22 48.7	5.580	12	5 45 9.74	2.3513	27 18 10.3	1.008
13	3 57 19.89	2.2072	25 28 19.9	5.460	13	5 47 30.85	2.3521	27 17 5.4	1.157
14	3 59 32.46	2.2119	25 33 43.9	5.338	14	5 49 52.00	2.3529	27 15 51.5	1.306
15	4 1 45.32	2.2166	25 39 0.5	5.216	15	5 52 13.20	2.3537	27 14 28.7	1.454
16	4 3 58.45	2.2211	25 44 9.8	5.093	16	5 54 34.44	2.3542	27 12 57.0	1.603
17	4 6 11.85	2.2256	25 49 11.7	4.970	17	5 56 55.70	2.3546	27 11 16.3	1.752
18	4 8 25.52	2.2301	25 54 6.2	4.846	18	5 59 16.99	2.3550	27 9 26.7	1.902
19	4 10 39.46	2.2345	25 58 53.2	4.720	19	6 1 38.30	2.3552	27 7 28.1	2.051
20	4 12 53.66	2.2389	26 3 32.6	4.593	20	6 3 59.62	2.3554	27 5 20.6	2.199
21	4 15 8.13	2.2433	26 8 4.3	4.465	21	6 6 20.95	2.3555	27 3 4.2	2.348
22	4 17 22.86	2.2476	26 12 28.4	4.337	22	6 8 42.28	2.3555	27 0 38.8	2.497
23	4 19 37.84	2.2518	N.26 16 44.8	4.208	23	6 11 3.61	2.3553	N.26 58 4.5	2.647
	FRIDAY 18.					SUNDAY 20.			
0	4 21 53.07	2.2559	N.26 20 53.4	4.078	0	6 13 24.92	2.3550	N.26 55 21.2	2.796
1	4 24 8.55	2.2600	26 24 54.2	3.948	1	6 15 46.21	2.3547	26 52 29.0	2.944
2	4 26 24.27	2.2640	26 28 47.1	3.817	2	6 18 7.48	2.3542	26 49 27.9	3.093
3	4 28 40.23	2.2680	26 32 32.2	3.685	3	6 20 28.72	2.3537	26 46 17.8	3.242
4	4 30 56.43	2.2718	26 36 9.3	3.552	4	6 22 49.92	2.3530	26 42 58.9	3.390
5	4 33 12.85	2.2756	26 39 38.4	3.418	5	6 25 11.08	2.3522	26 39 31.0	3.539
6	4 35 29.50	2.2793	26 42 59.5	3.284	6	6 27 32.19	2.3514	26 35 54.2	3.687
7	4 37 46.37	2.2830	26 46 12.5	3.148	7	6 29 53.25	2.3505	26 32 8.6	3.834
8	4 40 3.46	2.2867	26 49 17.3	3.013	8	6 32 14.25	2.3494	26 28 14.1	3.982
9	4 42 20.77	2.2902	26 52 14.0	2.877	9	6 34 35.28	2.3482	26 24 10.8	4.128
10	4 44 38.29	2.2936	26 55 2.5	2.739	10	6 36 56.04	2.3470	26 19 58.7	4.275
11	4 46 56.01	2.2969	26 57 42.7	2.601	11	6 39 16.82	2.3458	26 15 37.8	4.422
12	4 49 13.92	2.3002	27 0 14.6	2.462	12	6 41 37.53	2.3444	26 11 8.1	4.568
13	4 51 32.03	2.3034	27 2 38.2	2.323	13	6 43 58.15	2.3428	26 6 29.7	4.713
14	4 53 50.33	2.3066	27 4 53.4	2.184	14	6 46 18.67	2.3412	26 1 42.5	4.859
15	4 56 8.82	2.3097	27 7 0.3	2.044	15	6 48 39.09	2.3395	25 56 46.6	5.004
16	4 58 27.49	2.3126	27 8 58.7	1.903	16	6 50 59.41	2.3378	25 51 42.0	5.148
17	5 0 46.33	2.3154	27 10 48.6	1.761	17	6 53 19.63	2.3360	25 46 28.8	5.293
18	5 3 5.33	2.3181	27 12 30.0	1.619	18	6 55 39.73	2.3340	25 41 6.9	5.437
19	5 5 24.50	2.3208	27 14 2.9	1.477	19	6 57 59.71	2.3320	25 35 36.4	5.579
20	5 7 43.83	2.3234	27 15 27.2	1.333	20	7 0 19.57	2.3300	25 29 57.4	5.721
21	5 10 3.31	2.3259	27 16 42.9	1.190	21	7 2 39.31	2.3278	25 24 9.9	5.863
22	5 12 22.94	2.3282	27 17 50.0	1.046	22	7 4 58.91	2.3255	25 18 13.9	6.004
23	5 14 42.70	2.3305	27 18 48.4	0.902	23	7 7 18.37	2.3232	25 12 9.4	6.146
24	5 17 2.60	2.3327	N.27 19 38.2	0.758	24	7 9 37.70	2.3209	N.25 5 56.4	6.287

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 21.					WEDNESDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	7 9 37.70	2.3209	N.25 5 56.4	6.287	0	8 57 23.61	2.1607	N.17 37 28.0	12.041
1	7 11 56.88	2.3184	24 59 35.0	6.426	1	8 59 33.15	2.1573	17 25 22.7	12.137
2	7 14 15.91	2.3159	24 53 5.3	6.564	2	9 1 42.49	2.1539	17 13 11.6	12.232
3	7 16 34.79	2.3133	24 46 27.3	6.703	3	9 3 51.62	2.1504	17 0 54.9	12.325
4	7 18 53.51	2.3107	24 39 41.0	6.841	4	9 6 0.54	2.1470	16 48 32.6	12.417
5	7 21 12.07	2.3080	24 32 46.4	6.978	5	9 8 9.26	2.1437	16 36 4.9	12.507
6	7 23 30.47	2.3052	24 25 43.6	7.114	6	9 10 17.78	2.1403	16 23 31.8	12.597
7	7 25 48.70	2.3024	24 18 32.7	7.250	7	9 12 26.10	2.1370	16 10 53.3	12.685
8	7 28 6.76	2.2995	24 11 13.6	7.386	8	9 14 34.22	2.1337	15 58 9.6	12.772
9	7 30 24.64	2.2965	24 3 46.4	7.520	9	9 16 42.14	2.1304	15 45 20.7	12.858
10	7 32 42.34	2.2935	23 56 11.2	7.653	10	9 18 49.87	2.1273	15 32 26.7	12.943
11	7 34 59.86	2.2905	23 48 28.1	7.785	11	9 20 57.41	2.1242	15 19 27.5	13.028
12	7 37 17.20	2.2874	23 40 37.0	7.917	12	9 23 4.77	2.1211	15 6 23.3	13.111
13	7 39 34.35	2.2843	23 32 38.0	8.048	13	9 25 11.94	2.1180	14 53 14.2	13.192
14	7 41 51.31	2.2811	23 24 31.2	8.178	14	9 27 18.93	2.1149	14 40 0.3	13.272
15	7 44 8.08	2.2778	23 16 16.6	8.308	15	9 29 25.73	2.1118	14 26 41.6	13.351
16	7 46 24.65	2.2746	23 7 54.3	8.437	16	9 31 32.35	2.1089	14 13 18.2	13.429
17	7 48 41.03	2.2713	22 59 24.2	8.565	17	9 33 38.80	2.1061	13 59 50.1	13.507
18	7 50 57.21	2.2679	22 50 46.5	8.692	18	9 35 45.08	2.1032	13 46 17.4	13.583
19	7 53 13.18	2.2645	22 42 1.2	8.817	19	9 37 51.19	2.1004	13 32 40.2	13.658
20	7 55 28.95	2.2612	22 33 8.4	8.942	20	9 39 57.13	2.0977	13 18 58.5	13.731
21	7 57 44.52	2.2578	22 24 8.1	9.067	21	9 42 2.91	2.0950	13 5 12.5	13.803
22	7 59 59.88	2.2543	22 15 0.4	9.190	22	9 44 8.53	2.0923	12 51 22.2	13.874
23	8 2 15.03	2.2508	N.22 5 45.3	9.312	23	9 46 13.99	2.0897	N.12 37 27.6	13.944
	TUESDAY 22.					THURSDAY 24.			
0	8 4 29.97	2.2473	N.21 56 23.0	9.433	0	9 48 19.30	2.0872	N.12 23 28.9	14.013
1	8 6 44.70	2.2437	21 46 53.4	9.553	1	9 50 24.46	2.0847	12 9 26.1	14.081
2	8 8 59.21	2.2401	21 37 16.6	9.673	2	9 52 29.47	2.0823	11 55 19.2	14.147
3	8 11 13.51	2.2366	21 27 32.6	9.792	3	9 54 34.34	2.0800	11 41 8.4	14.212
4	8 13 27.60	2.2330	21 17 41.5	9.910	4	9 56 39.07	2.0777	11 26 53.7	14.277
5	8 15 41.47	2.2293	21 7 43.4	10.026	5	9 58 43.66	2.0754	11 12 35.2	14.339
6	8 17 55.12	2.2257	20 57 38.4	10.141	6	10 0 48.11	2.0731	10 58 13.0	14.401
7	8 20 8.55	2.2221	20 47 26.5	10.256	7	10 2 52.43	2.0710	10 43 47.1	14.462
8	8 22 21.77	2.2185	20 37 7.7	10.370	8	10 4 56.63	2.0691	10 29 17.6	14.522
9	8 24 34.77	2.2148	20 26 42.1	10.482	9	10 7 0.72	2.0672	10 14 44.5	14.580
10	8 26 47.55	2.2112	20 16 9.8	10.593	10	10 9 4.69	2.0652	10 0 8.0	14.637
11	8 29 0.11	2.2075	20 5 30.9	10.703	11	10 11 8.54	2.0633	9 45 28.1	14.693
12	8 31 12.45	2.2038	19 54 45.4	10.813	12	10 13 12.28	2.0614	9 30 44.8	14.748
13	8 33 24.57	2.2002	19 43 53.3	10.921	13	10 15 15.91	2.0597	9 15 58.3	14.802
14	8 35 36.47	2.1966	19 32 54.8	11.028	14	10 17 19.45	2.0581	9 1 8.6	14.853
15	8 37 48.16	2.1930	19 21 49.9	11.135	15	10 19 22.89	2.0565	8 46 15.9	14.904
16	8 39 59.63	2.1893	19 10 38.6	11.241	16	10 21 26.23	2.0550	8 31 20.1	14.955
17	8 42 10.88	2.1857	18 59 21.0	11.344	17	10 23 29.49	2.0536	8 16 21.3	15.004
18	8 44 21.91	2.1821	18 47 57.3	11.447	18	10 25 32.66	2.0522	8 1 19.6	15.052
19	8 46 32.73	2.1785	18 36 27.4	11.549	19	10 27 35.75	2.0509	7 46 15.1	15.098
20	8 48 43.33	2.1749	18 24 51.4	11.650	20	10 29 38.77	2.0497	7 31 7.8	15.143
21	8 50 53.72	2.1714	18 13 9.4	11.750	21	10 31 41.71	2.0485	7 15 57.9	15.187
22	8 53 3.90	2.1678	18 1 21.4	11.848	22	10 33 44.59	2.0475	7 0 45.4	15.230
23	8 55 13.86	2.1642	17 49 27.6	11.945	23	10 35 47.41	2.0464	6 45 30.3	15.272
24	8 57 23.61	2.1607	N.17 37 28.0	12.041	24	10 37 50.16	2.0454	N. 6 30 12.8	15.312

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 25.					SUNDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 37 50.16	2.0454	N. 6 30 12.8	15.312	0	12 16 30.92	2.0993	S. 6 7 59.2	15.786
1	10 39 52.86	2.0446	6 14 52.9	15.352	1	12 18 36.97	2.1026	6 23 45.7	15.764
2	10 41 55.52	2.0439	5 59 30.6	15.390	2	12 20 43.23	2.1060	6 39 30.9	15.740
3	10 43 58.13	2.0432	5 44 6.1	15.426	3	12 22 49.69	2.1094	6 55 14.5	15.714
4	10 46 0.70	2.0426	5 28 39.5	15.462	4	12 24 56.36	2.1130	7 10 56.5	15.687
5	10 48 3.24	2.0420	5 13 10.7	15.497	5	12 27 3.25	2.1166	7 26 36.9	15.658
6	10 50 5.74	2.0415	4 57 39.9	15.530	6	12 29 10.35	2.1202	7 42 15.5	15.628
7	10 52 8.22	2.0412	4 42 7.1	15.562	7	12 31 17.67	2.1240	7 57 52.3	15.597
8	10 54 10.68	2.0409	4 26 32.4	15.592	8	12 33 25.23	2.1280	8 13 27.2	15.564
9	10 56 13.13	2.0407	4 10 56.0	15.622	9	12 35 33.03	2.1320	8 29 0.0	15.529
10	10 58 15.56	2.0405	3 55 17.8	15.651	10	12 37 41.07	2.1360	8 44 30.7	15.494
11	11 0 17.99	2.0405	3 39 37.9	15.678	11	12 39 49.35	2.1401	8 59 59.3	15.457
12	11 2 20.42	2.0405	3 23 56.4	15.704	12	12 41 57.88	2.1443	9 15 25.6	15.418
13	11 4 22.85	2.0406	3 8 13.4	15.729	13	12 44 6.67	2.1486	9 30 49.5	15.377
14	11 6 25.29	2.0409	2 52 28.9	15.752	14	12 46 15.72	2.1530	9 46 10.9	15.335
15	11 8 27.75	2.0412	2 36 43.1	15.774	15	12 48 25.03	2.1574	10 1 29.7	15.292
16	11 10 30.23	2.0415	2 20 56.0	15.795	16	12 50 34.61	2.1620	10 16 45.9	15.247
17	11 12 32.73	2.0419	2 5 7.7	15.815	17	12 52 44.47	2.1667	10 31 59.3	15.200
18	11 14 35.26	2.0424	1 49 18.2	15.833	18	12 54 54.62	2.1715	10 47 9.9	15.152
19	11 16 37.82	2.0431	1 33 27.7	15.851	19	12 57 5.05	2.1763	11 2 17.5	15.102
20	11 18 40.43	2.0438	1 17 36.1	15.867	20	12 59 15.77	2.1811	11 17 22.1	15.051
21	11 20 43.08	2.0446	1 1 43.6	15.882	21	13 1 26.78	2.1860	11 32 23.6	14.998
22	11 22 45.78	2.0455	0 45 50.3	15.895	22	13 3 38.09	2.1911	11 47 21.8	14.943
23	11 24 48.54	2.0465	N. 0 29 56.2	15.907	23	13 5 49.71	2.1962	S. 12 2 16.7	14.887
	SATURDAY 26.					MONDAY 28.			
0	11 26 51.36	2.0475	N. 0 14 1.4	15.918	0	13 8 1.63	2.2013	S. 12 17 8.2	14.829
1	11 28 54.24	2.0487	S. 0 1 54.0	15.928	1	13 10 13.87	2.2066	12 31 56.2	14.769
2	11 30 57.20	2.0499	0 17 50.0	15.937	2	13 12 26.43	2.2119	12 46 40.5	14.708
3	11 33 0.23	2.0512	0 33 46.4	15.943	3	13 14 39.30	2.2172	13 1 21.1	14.645
4	11 35 3.34	2.0526	0 49 43.2	15.949	4	13 16 52.50	2.2227	13 15 57.9	14.581
5	11 37 6.54	2.0541	1 5 40.3	15.954	5	13 19 6.03	2.2283	13 30 30.8	14.514
6	11 39 9.83	2.0557	1 21 37.7	15.957	6	13 21 19.90	2.2340	13 44 59.6	14.446
7	11 41 13.22	2.0573	1 37 35.2	15.959	7	13 23 34.11	2.2397	13 59 24.3	14.377
8	11 43 16.71	2.0591	1 53 32.8	15.960	8	13 25 48.66	2.2454	14 13 44.8	14.306
9	11 45 20.31	2.0609	2 9 30.4	15.959	9	13 28 3.55	2.2511	14 28 1.0	14.232
10	11 47 24.02	2.0628	2 25 27.9	15.957	10	13 30 18.79	2.2570	14 42 12.7	14.157
11	11 49 27.85	2.0649	2 41 25.2	15.953	11	13 32 34.39	2.2629	14 56 19.9	14.081
12	11 51 31.81	2.0671	2 57 22.3	15.949	12	13 34 50.34	2.2688	15 10 22.4	14.003
13	11 53 35.90	2.0693	3 13 19.1	15.943	13	13 37 6.65	2.2749	15 24 20.2	13.923
14	11 55 40.12	2.0715	3 29 15.5	15.936	14	13 39 23.33	2.2811	15 38 13.2	13.842
15	11 57 44.48	2.0739	3 45 11.4	15.927	15	13 41 40.38	2.2872	15 52 1.2	13.758
16	11 59 48.98	2.0763	4 1 6.7	15.917	16	13 43 57.80	2.2934	16 5 44.2	13.673
17	12 1 53.64	2.0790	4 17 1.4	15.906	17	13 46 15.59	2.2997	16 19 22.0	13.586
18	12 3 58.46	2.0817	4 32 55.4	15.892	18	13 48 33.76	2.3060	16 32 54.5	13.497
19	12 6 3.44	2.0844	4 48 48.5	15.878	19	13 50 52.31	2.3123	16 46 21.6	13.407
20	12 8 8.58	2.0871	5 4 40.8	15.863	20	13 53 11.24	2.3187	16 59 43.3	13.315
21	12 10 13.89	2.0900	5 20 32.1	15.846	21	13 55 30.56	2.3252	17 12 59.4	13.221
22	12 12 19.38	2.0931	5 36 22.3	15.827	22	13 57 50.27	2.3317	17 26 9.8	13.125
23	12 14 25.06	2.0962	5 52 11.4	15.807	23	14 0 10.37	2.3382	17 39 14.4	13.027
24	12 16 30.92	2.0993	S. 6 7 59.2	15.786	24	14 2 30.85	2.3447	S. 17 52 13.1	12.928

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 2 30.85	2.3447	S.17 52 13.1	12.928
1	14 4 51.73	2.3513	18 5 5.8	12.827
2	14 7 13.01	2.3579	18 17 52.3	12.723
3	14 9 34.68	2.3645	18 30 32.6	12.618
4	14 11 56.75	2.3712	18 43 6.5	12.512
5	14 14 19.23	2.3780	18 55 34.0	12.403
6	14 16 42.11	2.3847	19 7 54.9	12.292
7	14 19 5.39	2.3914	19 20 9.1	12.180
8	14 21 29.08	2.3982	19 32 16.5	12.067
9	14 23 53.17	2.4049	19 44 17.1	11.952
10	14 26 17.67	2.4117	19 56 10.7	11.833
11	14 28 42.57	2.4184	20 7 57.1	11.713
12	14 31 7.88	2.4252	20 19 36.3	11.592
13	14 33 33.60	2.4320	20 31 8.2	11.469
14	14 35 59.72	2.4388	20 42 32.6	11.344
15	14 38 26.25	2 4456	20 53 49.5	11.218
16	14 40 53.19	2.4523	21 4 58.8	11.090
17	14 43 20.53	2.4590	21 16 0.3	10.959
18	14 45 48.27	2.4658	21 26 53.9	10.827
19	14 48 16.42	2.4725	21 37 39.5	10.693
20	14 50 44.97	2.4791	21 48 17.1	10.558
21	14 53 13.91	2.4857	21 58 46.5	10.421
22	14 55 43.25	2.4923	22 9 7.6	10.282
23	14 58 12.99	2.4990	S.22 19 20.3	10.141

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 0 43.13	2.5056	S.22 29 24.5	9.998
1	15 3 13.66	2.5120	22 39 20.1	9.854
2	15 5 44.57	2.5184	22 49 7.0	9.707
3	15 8 15.87	2.5248	22 58 45.0	9.559
4	15 10 47.55	2.5313	23 8 14.1	9.410
5	15 13 19.62	2.5377	23 17 34.2	9.260
6	15 15 52.07	2.5439	23 26 45.3	9.108
7	15 18 24.89	2.5500	23 35 47.1	8.953
8	15 20 58.07	2.5561	23 44 39.6	8.797
9	15 23 31.62	2.5622	23 53 22.7	8.639
10	15 26 5.53	2.5681	24 1 56.3	8.480
11	15 28 39.79	2.5739	24 10 20.3	8.320
12	15 31 14.40	2.5797	24 18 34.7	8.158
13	15 33 49.36	2.5855	24 26 39.3	7.994
14	15 36 24.66	2.5911	24 34 34.0	7.828
15	15 39 0.29	2.5966	24 42 18.7	7.661
16	15 41 36.25	2.6020	24 49 53.3	7.493
17	15 44 12.53	2.6072	24 57 17.9	7.325
18	15 46 49.12	2.6124	25 4 32.3	7.154
19	15 49 26.02	2.6176	25 11 36.4	6.982
20	15 52 3.23	2.6226	25 18 30.1	6.808
21	15 54 40.73	2.6274	25 25 13.3	6.633
22	15 57 18.51	2.6321	25 31 46.0	6.457
23	15 59 56.58	2.6367	25 38 8.1	6.279
24	16 2 34.92	2.6412	S.25 44 19.5	6.100

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ″	″
0	16 2 34.92	2.6412	S.25 44 19.5	6.100
1	16 5 13.52	2.6455	25 50 20.1	5.921
2	16 7 52.38	2.6497	25 56 10.0	5.741
3	16 10 31.49	2.6538	26 1 49.0	5.559
4	16 13 10.84	2.6577	26 7 17.1	5.376
5	16 15 50.41	2.6614	26 12 34.1	5.191
6	16 18 30.21	2.6651	26 17 40.0	5.006
7	16 21 10.23	2.6686	26 22 34.8	4.821
8	16 23 50.44	2.6718	26 27 18.5	4.634
9	16 26 30.84	2.6748	26 31 50.9	4.446
10	16 29 11.42	2.6778	26 36 12.0	4.257
11	16 31 52.18	2.6807	26 40 21.8	4.068
12	16 34 33.11	2.6834	26 44 20.2	3.878
13	16 37 14.19	2.6858	26 48 7.2	3.688
14	16 39 55.41	2.6882	26 51 42.7	3.497
15	16 42 36.77	2.6903	26 55 6.8	3.306
16	16 45 18.25	2.6922	26 58 19.4	3.113
17	16 47 59.84	2.6941	27 1 20.4	2.919
18	16 50 41.54	2.6957	27 4 9.7	2.725
19	16 53 23.33	2.6971	27 6 47.4	2.532
20	16 56 5.19	2.6983	27 9 13.5	2.338
21	16 58 47.12	2.6993	27 11 28.0	2.144
22	17 1 29.11	2.7002	27 13 30.8	1.949
23	17 4 11.14	2.7008	S.27 15 21.9	1.753

FRIDAY, JANUARY 1, 1897.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 6 53.20	2.7013	S.27 17 1.2	1.557

PHASES OF THE MOON.

			d	h	m
●	New Moon	Dec.	4	5	51.0
☽	First Quarter		11	12	29.3
○	Full Moon		19	16	5.3
☾	Last Quarter		27	0	8.6

			d	h
☾	Perigee	Dec.	2	14.4
☾	Apogee		14	12.0
☾	Perigee		30	12.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Pollux	W.	93 23 50	2124	95 14 13	2116	97 4 47	2109	98 55 32	2103
	Regulus	W.	56 27 28	2113	58 18 8	2105	60 9 0	2098	62 0 3	2091
	Jupiter	W.	45 40 55	2142	47 30 50	2134	49 20 57	2126	51 11 16	2119
	Sun	E.	45 21 2	2450	43 38 38	2443	41 56 5	2438	40 13 24	2433
2	Regulus	W.	71 17 34	2066	73 9 25	2063	75 1 21	2061	76 53 21	2059
	Jupiter	W.	60 25 18	2092	62 16 29	2089	64 7 45	2086	65 59 5	2084
	Sun	E.	31 38 45	2425	29 55 46	2428	28 12 51	2432	26 30 2	2438
6	Sun	W.	23 56 45	2684	25 33 46	2692	27 10 36	2703	28 47 12	2715
	Fomalhaut	E.	55 11 32	2819	53 37 29	2860	52 4 19	2904	50 32 5	2952
	α Pegasi	E.	75 27 18	2478	73 45 34	2498	72 4 18	2518	70 23 30	2538
7	Sun	W.	36 45 51	2788	38 20 35	2805	39 54 57	2822	41 28 56	2839
	α Pegasi	E.	62 7 3	2656	60 29 24	2682	58 52 20	2709	57 15 52	2737
	α Arietis	E.	103 43 37	2433	102 0 50	2452	100 18 29	2470	98 36 33	2487
8	Sun	W.	49 13 8	2931	50 44 48	2950	52 16 4	2968	53 46 57	2986
	α Arietis	E.	90 13 10	2578	88 33 45	2596	86 54 45	2615	85 16 10	2632
	Aldebaran	E.	121 54 19	2657	120 16 41	2672	118 39 24	2687	117 2 27	2702
9	Sun	W.	61 15 35	3078	62 44 11	3096	64 12 25	3114	65 40 17	3132
	α Arietis	E.	77 9 16	2721	75 33 4	2738	73 57 15	2755	72 21 48	2772
	Aldebaran	E.	109 2 51	2781	107 27 58	2796	105 53 25	2812	104 19 13	2828
10	Sun	W.	72 54 29	3214	74 20 21	3231	75 45 54	3245	77 11 10	3260
	Venus	W.	34 52 21	3271	36 17 6	3288	37 41 32	3304	39 5 39	3319
	α Arietis	E.	64 29 56	2852	62 56 35	2867	61 23 34	2882	59 50 52	2897
	Aldebaran	E.	96 33 7	2902	95 0 51	2916	93 28 53	2930	91 57 12	2944
	Mars	E.	108 2 44	2700	106 26 4	2714	104 49 43	2728	103 13 40	2741
11	Sun	W.	84 13 16	3328	85 36 55	3340	87 0 20	3352	88 23 31	3364
	α Aquilæ	W.	49 38 5	4199	50 46 32	4155	51 55 41	4116	53 5 27	4081
	Venus	W.	46 2 2	3388	47 24 32	3401	48 46 47	3413	50 8 49	3424
	α Arietis	E.	52 11 50	2964	50 40 52	2976	49 10 9	2989	47 39 42	3000
	Aldebaran	E.	84 23 0	3008	82 52 57	3019	81 23 8	3031	79 53 34	3042
	Mars	E.	95 17 42	2803	93 43 18	2814	92 9 8	2825	90 35 12	2835
12	Sun	W.	95 16 25	3412	96 38 28	3421	98 0 21	3429	99 22 5	3436
	α Aquilæ	W.	59 1 53	3948	60 14 24	3927	61 27 16	3910	62 40 26	3892
	Venus	W.	56 55 55	3474	58 16 48	3482	59 37 32	3490	60 58 7	3498
	α Arietis	E.	40 10 58	3056	38 41 54	3065	37 13 2	3075	35 44 22	3086
	Aldebaran	E.	72 28 58	3092	71 0 39	3101	69 32 31	3110	68 4 33	3118
	Mars	E.	82 48 37	2879	81 15 51	2886	79 43 14	2894	78 10 47	2900
13	Sun	W.	106 8 55	3464	107 29 59	3469	108 50 58	3472	110 11 53	3475
	α Aquilæ	W.	68 50 10	3825	70 4 46	3816	71 19 32	3805	72 34 29	3796
	Venus	W.	67 39 9	3526	68 59 4	3531	70 18 54	3535	71 38 40	3538
	Fomalhaut	W.	43 9 40	3847	44 23 54	3810	45 38 46	3777	46 54 12	3746
	Aldebaran	E.	60 47 7	3155	59 20 4	3162	57 53 9	3168	56 26 22	3175
	Mars	E.	70 30 24	2927	68 58 39	2930	67 26 58	2934	65 55 22	2936
	Pollux	E.	102 57 43	3076	101 29 4	3080	100 0 30	3082	98 31 59	3086

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Pollux	W.	100 46 27	2097	102 37 31	2092	104 28 43	2087	106 20 2	2083
	Regulus	W.	63 51 16	2085	65 42 39	2079	67 34 10	2074	69 25 49	2070
	JUPITER	W.	53 1 46	2113	54 52 26	2106	56 43 16	2101	58 34 13	2096
	SUN	E.	38 30 36	2429	36 47 43	2426	35 4 45	2424	33 21 45	2424
2	Regulus	W.	78 45 24	2057	80 37 29	2057	82 29 34	2057	84 21 39	2057
	JUPITER	W.	67 50 29	2083	69 41 55	2082	71 33 22	2081	73 24 50	2082
	SUN	E.	24 47 21	2447	23 4 53	2460	21 22 43	2477	19 40 57	2499
6	SUN	W.	30 23 32	2728	31 59 35	2741	33 35 20	2756	35 10 46	2772
	Fomalhaut	E.	49 0 52	3002	47 30 42	3057	46 1 40	3116	44 33 50	3181
	α Pegasi	E.	68 43 10	2560	67 3 20	2583	65 24 2	2607	63 45 16	2631
7	SUN	W.	43 2 33	2857	44 35 47	2876	46 8 37	2894	47 41 4	2912
	α Pegasi	E.	55 40 1	2766	54 4 49	2796	52 30 16	2828	50 56 24	2861
	α Arietis	E.	96 55 2	2505	95 13 56	2524	93 33 16	2541	91 53 0	2560
8	SUN	W.	55 17 27	3005	56 47 34	3024	58 17 17	3043	59 46 37	3060
	α Arietis	E.	83 37 59	2651	82 0 13	2668	80 22 50	2686	78 45 51	2704
	Aldebaran	E.	115 25 50	2718	113 49 34	2734	112 13 39	2750	110 38 5	2765
9	SUN	W.	67 7 48	3149	68 34 58	3166	70 1 48	3183	71 28 18	3198
	α Arietis	E.	70 46 43	2788	69 12 0	2805	67 37 38	2821	66 3 37	2836
	Aldebaran	E.	102 45 21	2843	101 11 49	2858	99 38 36	2873	98 5 42	2887
10	SUN	W.	78 36 8	3275	80 0 49	3288	81 25 14	3302	82 49 23	3316
	VENUS	W.	40 29 29	3333	41 53 2	3348	43 16 18	3362	44 39 18	3376
	α Arietis	E.	58 18 29	2910	56 46 23	2924	55 14 35	2938	53 43 4	2951
	Aldebaran	E.	90 25 49	2957	88 54 42	2970	87 23 52	2983	85 53 18	2996
	MARS	E.	101 37 55	2754	100 2 27	2767	98 27 16	2779	96 52 21	2792
11	SUN	W.	89 46 29	3374	91 9 15	3385	92 31 49	3394	93 54 12	3403
	α Aquilæ	W.	54 15 47	4049	55 26 38	4020	56 37 58	3993	57 49 44	3970
	VENUS	W.	51 30 38	3436	52 52 14	3446	54 13 39	3456	55 34 52	3465
	α Arietis	E.	46 9 29	3012	44 39 31	3022	43 9 46	3034	41 40 15	3045
	Aldebaran	E.	78 24 13	3053	76 55 6	3063	75 26 11	3073	73 57 29	3082
	MARS	E.	89 1 29	2844	87 27 58	2854	85 54 40	2862	84 21 33	2871
12	SUN	W.	100 43 41	3442	102 5 10	3449	103 26 31	3454	104 47 46	3460
	α Aquilæ	W.	63 53 54	3877	65 7 37	3862	66 21 35	3850	67 35 46	3837
	VENUS	W.	62 18 33	3505	63 38 52	3511	64 59 4	3517	66 19 9	3522
	α Arietis	E.	34 15 55	3096	32 47 40	3106	31 19 38	3116	29 51 48	3127
	Aldebaran	E.	66 36 45	3126	65 9 7	3133	63 41 38	3141	62 14 18	3148
	MARS	E.	76 38 28	2906	75 6 17	2912	73 34 13	2916	72 2 15	2922
13	SUN	W.	111 32 45	3479	112 53 33	3480	114 14 19	3482	115 35 3	3484
	α Aquilæ	W.	73 49 35	3788	75 4 50	3780	76 20 13	3773	77 35 43	3766
	VENUS	W.	72 58 22	3540	74 18 2	3543	75 37 39	3544	76 57 15	3545
	Fomalhaut	W.	48 10 11	3718	49 26 39	3692	50 43 35	3667	52 0 57	3646
	Aldebaran	E.	54 59 43	3181	53 33 11	3187	52 6 46	3193	50 40 28	3199
	MARS	E.	64 23 49	2939	62 52 20	2941	61 20 53	2943	59 49 29	2944
	Pollux	E.	97 3 32	3088	95 35 8	3090	94 6 46	3091	92 38 26	3092

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″
14	*a* Aquilæ	W.	78 51 21	3760	80 7 5	3753	81 22 56	3747	82 38 53
	Venus	W.	78 16 49	3545	79 36 23	3546	80 55 56	3545	82 15 30
	Fomalhaut	W.	53 18 42	3625	54 36 49	3605	55 55 18	3587	57 14 7
	Aldebaran	E.	49 14 18	3204	47 48 14	3211	46 22 18	3218	44 56 30
	Mars	E.	58 18 6	2945	56 46 44	2946	55 15 23	2946	53 44 2
	Pollux	E.	91 10 7	3093	89 41 49	3093	88 13 31	3092	86 45 12
15	*a* Aquilæ	W.	88 59 50	3723	90 16 13	3719	91 32 40	3717	92 49 9
	Venus	W.	88 53 42	3535	90 13 28	3531	91 33 18	3527	92 53 12
	Fomalhaut	W.	63 52 33	3496	65 13 2	3483	66 33 45	3470	67 54 43
	a Pegasi	W.	41 26 44	3494	42 47 15	3468	44 8 15	3444	45 29 42
	Mars	E.	46 6 59	2938	44 35 28	2935	43 3 54	2932	41 32 16
	Pollux	E.	79 23 19	3083	77 54 49	3080	76 26 15	3078	74 57 38
16	Fomalhaut	W.	74 42 48	3402	76 5 2	3393	77 27 27	3382	78 50 4
	a Pegasi	W.	52 22 54	3325	53 46 36	3309	55 10 37	3293	56 34 57
	Pollux	E.	67 33 19	3052	66 4 10	3047	64 34 55	3041	63 5 33
	Regulus	E.	104 26 40	3037	102 57 13	3032	101 27 40	3026	99 58 0
17	Fomalhaut	W.	85 45 49	3328	87 9 28	3319	88 33 17	3312	89 57 15
	a Pegasi	W.	63 40 51	3209	65 6 50	3196	66 33 4	3183	67 59 34
	Pollux	E.	55 36 56	3005	54 6 49	2998	52 36 34	2991	51 6 10
	Regulus	E.	92 27 38	2985	90 57 7	2978	89 26 27	2971	87 55 38
18	*a* Pegasi	W.	75 15 38	3112	76 43 33	3101	78 11 41	3091	79 40 2
	a Arietis	W.	32 0 2	2977	33 30 44	2963	35 1 43	2951	36 32 57
	Pollux	E.	43 32 4	2950	42 0 49	2943	40 29 25	2937	38 57 53
	Regulus	E.	80 19 2	2922	78 47 11	2914	77 15 10	2905	75 42 58
	Jupiter	E.	91 57 44	2935	90 26 9	2926	88 54 23	2917	87 22 26
19	*a* Pegasi	W.	87 4 58	3030	88 34 34	3021	90 4 21	3012	91 34 19
	a Arietis	W.	44 12 51	2882	45 45 33	2872	47 18 28	2861	48 51 37
	Regulus	E.	67 59 7	2852	66 25 46	2843	64 52 14	2834	63 18 30
	Jupiter	E.	79 39 51	2863	78 6 45	2855	76 33 28	2845	74 59 59
20	*a* Arietis	W.	56 40 42	2799	58 15 11	2790	59 49 52	2780	61 24 46
	Regulus	E.	55 26 54	2779	53 51 59	2771	52 16 53	2762	50 41 35
	Jupiter	E.	67 9 35	2791	65 34 55	2782	64 0 3	2772	62 24 59
	Spica	E.	109 29 28	2782	107 54 37	2773	106 19 34	2764	104 44 19
21	*a* Arietis	W.	69 22 22	2724	70 58 30	2715	72 34 50	2705	74 11 23
	Aldebaran	W.	38 11 43	2886	39 44 20	2866	41 17 23	2846	42 50 51
	Mars	W.	29 42 4	2602	31 20 56	2594	32 59 59	2585	34 39 14
	Regulus	E.	42 42 11	2710	41 5 44	2701	39 29 5	2692	37 52 15
	Jupiter	E.	54 26 47	2720	52 50 34	2712	51 14 10	2704	49 37 35
	Spica	E.	96 45 7	2710	95 8 41	2701	93 32 3	2693	91 55 14
22	*a* Arietis	W.	82 17 2	2654	83 54 44	2645	85 32 38	2637	87 10 43
	Aldebaran	W.	50 43 36	2752	52 19 7	2738	53 54 56	2726	55 31 1
	Mars	W.	42 58 20	2536	44 38 43	2528	46 19 17	2520	48 0 2
	Jupiter	E.	41 31 58	2657	39 54 20	2649	38 16 32	2642	36 38 34
	Spica	E.	83 48 15	2642	82 10 17	2634	80 32 8	2626	78 53 48

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h.}	P. L. of Diff.	XVIII^{h.}	P. L. of Diff.	XXI^{h.}	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
14	*a* Aquilæ	W.	83 54 55	3738	85 11 2	3733	86 27 14	3729	87 43 30	3726
	Venus	W.	83 35 5	3544	84 54 41	3542	86 14 19	3540	87 33 59	3537
	Fomalhaut	W.	58 33 14	3554	59 52 39	3538	61 12 21	3524	62 32 19	3509
	Aldebaran	E.	43 30 49	3231	42 5 17	3238	40 39 53	3247	39 14 39	3255
	Mars	E.	52 12 40	2944	50 41 17	2943	49 9 53	2942	47 38 27	2940
	Pollux	E.	85 16 53	3091	83 48 32	3090	82 20 10	3088	80 51 46	3086
15	*a* Aquilæ	W.	94 5 41	3713	95 22 14	3711	96 38 49	3711	97 55 24	3711
	Venus	W.	94 13 11	3518	95 33 15	3514	96 53 24	3508	98 13 39	3503
	Fomalhaut	W.	69 15 54	3446	70 37 19	3435	71 58 56	3423	73 20 46	3413
	a Pegasi	W.	46 51 34	3400	48 13 50	3379	49 36 30	3360	50 59 32	3343
	Mars	E.	40 0 35	2926	38 28 49	2923	36 56 59	2918	35 25 3	2914
	Pollux	E.	73 28 56	3070	72 0 10	3065	70 31 18	3061	69 2 21	3057
16	Fomalhaut	W.	80 12 52	3363	81 35 51	3354	82 59 0	3345	84 22 20	3337
	a Pegasi	W.	57 59 34	3263	59 24 29	3249	60 49 40	3235	62 15 8	3222
	Pollux	E.	61 36 5	3030	60 6 29	3024	58 36 46	3018	57 6 55	3011
	Regulus	E.	98 28 12	3014	96 58 16	3007	95 28 12	3000	93 57 59	2993
17	Fomalhaut	W.	91 21 23	3296	92 45 39	3288	94 10 4	3282	95 34 36	3276
	a Pegasi	W.	69 26 18	3158	70 53 17	3147	72 20 30	3135	73 47 57	3124
	Pollux	E.	49 35 38	2977	48 4 57	2971	46 34 8	2964	45 3 10	2958
	Regulus	E.	86 24 39	2955	84 53 30	2947	83 22 11	2939	81 50 42	2931
18	*a* Pegasi	W.	81 8 36	3069	82 37 23	3060	84 6 22	3049	85 35 34	3039
	a Arietis	W.	38 4 27	2927	39 36 11	2916	41 8 10	2905	42 40 23	2893
	Pollux	E.	37 26 13	2924	35 54 25	2919	34 22 30	2913	32 50 28	2907
	Regulus	E.	74 10 34	2887	72 37 59	2879	71 5 13	2870	69 32 16	2861
	Jupiter	E.	85 50 18	2899	84 17 58	2891	82 45 27	2882	81 12 45	2873
19	*a* Pegasi	W.	93 4 29	2994	94 34 49	2985	96 5 20	2977	97 36 1	2970
	a Arietis	W.	50 24 59	2840	51 58 35	2830	53 32 24	2820	55 6 26	2809
	Regulus	E.	61 44 34	2815	60 10 26	2807	58 36 7	2798	57 1 36	2789
	Jupiter	E.	73 26 18	2827	71 52 25	2818	70 18 20	2808	68 44 3	2800
20	*a* Arietis	W.	62 59 52	2761	64 35 11	2752	66 10 42	2742	67 46 26	2733
	Regulus	E.	49 6 6	2744	47 30 25	2735	45 54 32	2726	44 18 27	2718
	Jupiter	E.	60 49 44	2755	59 14 17	2747	57 38 39	2738	56 2 49	2729
	Spica	E.	103 8 53	2747	101 33 15	2737	99 57 24	2728	98 21 21	2719
21	*a* Arietis	W.	75 48 7	2688	77 25 3	2679	79 2 11	2670	80 39 31	2662
	Aldebaran	W.	44 24 42	2811	45 58 55	2795	47 33 29	2780	49 8 23	2766
	Mars	W.	36 18 40	2569	37 58 18	2561	39 38 7	2552	41 18 8	2544
	Regulus	E.	36 15 14	2676	34 38 2	2668	33 0 39	2660	31 23 5	2652
	Jupiter	E.	48 0 49	2687	46 23 52	2679	44 46 44	2672	43 9 26	2664
	Spica	E.	90 18 13	2676	88 41 1	2667	87 3 37	2659	85 26 2	2650
22	*a* Arietis	W.	88 49 0	2621	90 27 27	2612	92 6 6	2604	93 44 56	2596
	Aldebaran	W.	57 7 23	2702	58 44 0	2690	60 20 53	2680	61 58 0	2669
	Mars	W.	49 40 57	2504	51 22 4	2497	53 3 21	2489	54 44 49	2482
	Jupiter	E.	35 0 27	2629	33 22 11	2623	31 43 47	2617	30 5 15	2611
	Spica	E.	77 15 17	2609	75 36 34	2601	73 57 41	2593	72 18 37	2585

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″
23	α Arietis	W.	95 23 57	2588	97 3 9	2580	98 42 31	2572	100 22 4
	Aldebaran	W.	63 35 22	2658	65 12 58	2648	66 50 48	2638	68 28 51
	MARS	W.	56 26 27	2475	58 8 16	2467	59 50 15	2460	61 32 25
	Spica	E.	70 39 22	2577	68 59 56	2570	67 20 20	2562	65 40 33
	SATURN	E.	104 30 42	2642	102 52 44	2633	101 14 34	2625	99 36 13
24	Aldebaran	W.	76 42 21	2583	78 21 40	2574	80 1 10	2566	81 40 52
	MARS	W.	70 5 48	2417	71 48 59	2409	73 32 21	2402	75 15 53
	Pollux	W.	34 2 48	2552	35 42 49	2540	37 23 6	2530	39 3 37
	Spica	E.	57 18 59	2517	55 38 9	2509	53 57 8	2502	52 15 57
	SATURN	E.	91 21 39	2577	89 42 12	2569	88 2 34	2561	86 22 45
	SUN	E.	128 9 41	2865	126 36 37	2856	125 3 22	2847	123 29 55
25	Aldebaran	W.	90 2 9	2518	91 42 57	2511	93 23 55	2503	95 5 4
	MARS	W.	83 56 4	2360	85 40 36	2353	87 25 19	2346	89 10 12
	Pollux	W.	47 29 40	2473	49 11 31	2464	50 53 35	2455	52 35 51
	Spica	E.	43 47 30	2459	42 5 19	2452	40 22 58	2445	38 40 28
	SATURN	E.	78 1 6	2516	76 20 15	2510	74 39 15	2502	72 58 5
	Antares	E.	89 34 46	2448	87 52 20	2441	86 9 43	2433	84 26 56
	SUN	E.	115 39 52	2795	114 5 18	2786	112 30 32	2779	110 55 36
26	MARS	W.	97 57 8	2304	99 43 2	2298	101 29 5	2290	103 15 19
	Pollux	W.	61 10 10	2405	62 53 37	2398	64 37 15	2389	66 21 5
	SATURN	E.	64 29 49	2462	62 47 42	2455	61 5 26	2450	59 23 2
	Antares	E.	75 50 18	2388	74 6 26	2380	72 22 23	2373	70 38 10
	SUN	E.	102 58 7	2728	101 22 4	2719	99 45 50	2711	98 9 25
27	Pollux	W.	75 3 0	2344	76 47 56	2337	78 33 2	2329	80 18 19
	Regulus	W.	38 3 18	2334	39 48 28	2326	41 33 50	2319	43 19 22
	SATURN	E.	50 49 1	2418	49 5 52	2414	47 22 37	2410	45 39 17
	Antares	E.	61 54 24	2329	60 9 7	2322	58 23 40	2315	56 38 3
	SUN	E.	90 4 40	2663	88 27 11	2656	86 49 32	2649	85 11 43
28	Pollux	W.	89 7 15	2289	90 53 31	2283	92 39 56	2277	94 26 30
	Regulus	W.	52 9 36	2278	53 56 8	2271	55 42 50	2265	57 29 41
	JUPITER	W.	40 32 35	2287	42 18 53	2281	44 5 21	2273	45 52 0
	Antares	E.	47 47 28	2275	46 0 52	2269	44 14 7	2263	42 27 13
	SUN	E.	77 0 6	2605	75 21 18	2598	73 42 20	2591	72 3 13
29	Regulus	W.	66 26 3	2233	68 13 42	2227	70 1 29	2223	71 49 22
	JUPITER	W.	54 47 37	2237	56 35 10	2231	58 22 51	2226	60 10 40
	Antares	E.	33 30 36	2230	31 42 53	2226	29 55 4	2221	28 7 8
	SUN	E.	63 45 37	2557	62 5 43	2553	60 25 43	2548	58 45 36
30	Regulus	W.	80 50 13	2203	82 38 36	2200	84 27 3	2198	86 15 33
	JUPITER	W.	69 11 14	2204	70 59 36	2201	72 48 2	2199	74 36 31
	SUN	E.	50 23 44	2527	48 43 9	2526	47 2 32	2525	45 21 53
31	Regulus	W.	95 18 23	2196	97 6 57	2197	98 55 29	2198	100 43 59
	JUPITER	W.	83 39 21	2195	85 27 56	2196	87 16 29	2198	89 5 0
	Spica	W.	41 18 3	2205	43 6 23	2205	44 54 43	2206	46 43 2
	SUN	E.	36 58 30	2526	35 17 53	2529	33 37 20	2532	31 56 51

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	α Arietis	W.	102 1 47	2557	103 41 41	2550	105 21 45	2542	107 2 0	2535
	Aldebaran	W.	70 7 8	2618	71 45 38	2610	73 24 20	2601	75 3 14	2591
	Mars	W.	63 14 45	2445	64 57 15	2438	66 39 56	2431	68 22 47	2424
	Spica	E.	64 0 35	2547	62 20 27	2539	60 40 8	2532	58 59 39	2524
	Saturn	E.	97 57 40	2608	96 18 56	2600	94 40 1	2592	93 0 55	2585
24	Aldebaran	W.	83 20 45	2550	85 0 49	2541	86 41 5	2533	88 21 32	2526
	Mars	W.	76 59 35	2388	78 43 27	2381	80 27 29	2374	82 11 41	2366
	Pollux	W.	40 44 23	2510	42 25 22	2500	44 6 35	2491	45 48 1	2482
	Spica	E.	50 34 36	2487	48 53 5	2480	47 11 23	2472	45 29 31	2466
	Saturn	E.	84 42 46	2546	83 2 37	2538	81 22 17	2531	79 41 47	2523
	Sun	E.	121 56 17	2830	120 22 28	2821	118 48 27	2812	117 14 15	2804
25	Aldebaran	W.	96 46 22	2489	98 27 50	2482	100 9 28	2476	101 51 15	2469
	Mars	W.	90 55 15	2332	92 40 28	2325	94 25 51	2318	96 11 24	2311
	Pollux	W.	54 18 19	2438	56 0 59	2430	57 43 51	2422	59 26 55	2414
	Spica	E.	36 57 48	2432	35 14 59	2426	33 32 1	2419	31 48 54	2413
	Saturn	E.	71 16 45	2488	69 35 15	2482	67 53 36	2475	66 11 47	2468
	Antares	E.	82 43 58	2418	81 0 49	2410	79 17 29	2403	77 33 59	2396
	Sun	E.	109 20 28	2762	107 45 10	2753	106 9 40	2744	104 33 59	2736
26	Mars	W.	105 1 42	2277	106 48 16	2270	108 34 59	2264	110 21 52	2257
	Pollux	W.	68 5 6	2374	69 49 18	2366	71 33 41	2359	73 18 15	2351
	Saturn	E.	57 40 29	2438	55 57 48	2433	54 15 0	2427	52 32 4	2422
	Antares	E.	68 53 46	2358	67 9 11	2351	65 24 26	2344	63 39 30	2337
	Sun	E.	96 32 50	2695	94 56 3	2687	93 19 6	2679	91 41 58	2672
27	Pollux	W.	82 3 46	2315	83 49 24	2309	85 35 11	2302	87 21 8	2295
	Regulus	W.	45 5 5	2304	46 50 58	2298	48 37 1	2291	50 23 14	2285
	Saturn	E.	43 55 53	2405	42 12 25	2403	40 28 55	2402	38 45 23	2401
	Antares	E.	54 52 16	2302	53 6 19	2295	51 20 12	2288	49 33 55	2281
	Sun	E.	83 33 43	2633	81 55 33	2626	80 17 14	2619	78 38 45	2612
28	Pollux	W.	96 13 13	2265	98 0 4	2260	99 47 3	2254	101 34 10	2249
	Regulus	W.	59 16 41	2253	61 3 49	2247	62 51 6	2242	64 38 31	2237
	Jupiter	W.	47 38 49	2260	49 25 47	2253	51 12 55	2247	53 0 12	2242
	Antares	E.	40 40 10	2251	38 52 59	2245	37 5 39	2240	35 18 11	2235
	Sun	E.	70 23 58	2580	68 44 35	2573	67 5 3	2568	65 25 24	2562
29	Regulus	W.	73 37 22	2215	75 25 27	2211	77 13 38	2208	79 1 53	2205
	Jupiter	W.	61 58 35	2217	63 46 37	2214	65 34 44	2210	67 22 56	2206
	Antares	E.	26 19 6	2214	24 30 59	2210	22 42 46	2206	20 54 28	2204
	Sun	E.	57 5 24	2540	55 25 6	2536	53 44 43	2533	52 4 15	2530
30	Regulus	W.	88 4 5	2196	89 52 38	2195	91 41 13	2195	93 29 48	2195
	Jupiter	W.	76 25 2	2196	78 13 35	2195	80 2 10	2195	81 50 45	2194
	Sun	E.	43 41 12	2523	42 0 31	2523	40 19 50	2523	38 39 9	2525
31	Regulus	W.	102 32 26	2202	104 20 50	2206	106 9 9	2209	107 57 23	2213
	Jupiter	W.	90 53 29	2202	92 41 54	2204	94 30 15	2208	96 18 31	2211
	Spica	W.	48 31 18	2210	50 19 31	2212	52 7 41	2214	53 55 47	2218
	Sun	E.	30 16 26	2540	28 36 8	2545	26 55 57	2551	25 15 55	2560

GREENWICH MEAN TIME.

	JANUARY.						FEBRUARY.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	19 17 23.55	+17.807	−24 23 22.0	+29.29	0 34.9	1	21 48 49.07	− 3.918	−10 50 43.6	+23.88	1 3.8
2	19 24 30.67	17.784	24 10 51.8	33.22	0 38.1	2	21 46 54.55	5.611	10 43 20.8	12.98	0 57.9
3	19 31 37.08	17.749	23 56 47.3	37.15	0 41.2	3	21 44 20.69	7.185	10 40 21.1	+ 2.00	0 51.4
4	19 38 42.50	17.700	23 41 8.3	41.10	0 44.4	4	21 41 11.03	8.588	10 41 42.9	− 8.75	0 44.3
5	19 45 46.58	17.637	23 23 54.5	45.05	0 47.5	5	21 37 30.23	9.771	10 47 16.4	18.93	0 36.7
6	19 52 48.94	+17.557	−23 5 6.1	+48.98	0 50.6	6	21 33 24.11	−10.692	−10 56 44.5	−28.23	0 28.7
7	19 59 49.17	17.459	22 44 43.7	52.88	0 53.7	7	21 28 59.37	11.321	11 9 42.3	36.39	0 20.4
8	20 6 46.80	17.339	22 22 48.0	56.75	0 56.7	8	21 24 23.34	11.635	11 25 39.6	43.19	0 11.9
9	20 13 41.27	17.196	21 59 20.4	60.54	0 59.7	9	21 19 43.54	11.632	11 44 2.6	48.48	{ 0 3.4 23 56.9
10	20 20 32.00	17.027	21 34 22.6	64.26	1 2.6	10	21 15 7.34	11.336	12 4 14.9	52.29	23 46.6
11	20 27 18.31	+16.827	−21 7 56.8	+67.87	1 5.4	11	21 10 41.55	−10.770	−12 25 41.0	−54.63	23 38.5
12	20 33 59.44	16.594	20 40 6.0	71.34	1 8.2	12	21 6 32.21	9.973	12 47 46.3	55.61	23 30.8
13	20 40 34.50	16.321	20 10 54.1	74.64	1 10.8	13	21 2 44.33	8.990	13 10 0.6	55.39	23 23.5
14	20 47 2.51	16.005	19 40 25.5	77.82	1 13.3	14	20 59 21.84	7.864	13 31 56.9	54.15	23 16.6
15	20 53 22.33	15.638	19 8 45.8	80.54	1 15.7	15	20 56 27.61	6.644	13 53 12.9	52.07	23 10.3
16	20 59 32.69	+15.215	−18 36 2.3	+83.03	1 17.9	16	20 54 3.38	− 5.369	−14 13 30.9	−49.33	23 4.5
17	21 5 32.14	14.728	18 2 23.3	85.16	1 20.0	17	20 52 10.08	4.072	14 32 36.6	46.08	22 59.2
18	21 11 19.08	14.170	17 27 58.4	86.84	1 21.8	18	20 50 47.86	2.783	14 50 19.5	42.45	22 54.4
19	21 16 51.67	13.532	16 52 59.4	87.99	1 23.4	19	20 49 56.28	1.522	15 6 32.1	38.56	22 50.0
20	21 22 7.89	12.805	16 17 39.5	88.55	1 24.7	20	20 49 34.43	− 0.308	15 21 9.0	34.50	22 46.2
21	21 27 5.53	+11.982	−15 42 14.5	+88.41	1 25.7	21	20 49 41.06	+ 0.851	−15 34 7.1	−30.32	22 42.8
22	21 31 42.16	11.052	15 7 1.9	87.49	1 26.3	22	20 50 14.77	1.947	15 45 24.1	26.09	22 39.8
23	21 35 55.16	10.012	14 32 21.5	85.70	1 26.6	23	20 51 13.99	2.975	15 54 59.2	21.84	22 37.3
24	21 39 41.79	8.854	13 58 35.0	82.97	1 26.4	24	20 52 37.05	3.935	16 2 52.2	17.58	22 35.1
25	21 42 59.17	7.575	13 26 6.2	79.23	1 25.7	25	20 54 22.32	4.827	16 9 3.3	13.35	22 33.2
26	21 45 44.44	+ 6.178	−12 55 20.4	+74.41	1 24.5	26	20 56 28.24	+ 5.655	−16 13 33.5	− 9.17	22 31.7
27	21 47 54.81	4.668	12 26 43.5	68.48	1 22.7	27	20 58 53.27	6.420	16 16 23.9	5.03	22 30.4
28	21 49 27.71	3.057	12 0 42.3	61.44	1 20.3	28	21 1 35.92	7.125	16 17 35.3	− 0.94	22 29.4
29	21 50 20.89	+ 1.363	11 37 42.9	53.34	1 17.2	29	21 4 34.82	7.775	16 17 9.2	+ 3.10	22 28.7
30	21 50 32.69	− 0.388	11 18 9.5	44.28	1 13.4	30	21 7 48.69	8.372	16 15 6.8	7.09	22 28.2
31	21 50 2.10	− 2.162	−11 2 23.8	+34.39	1 8.9	31	21 11 16.32	+ 8.923	−16 11 29.4	+11.02	22 27.9
32	21 48 49.07	− 3.918	−10 50 43.6	+23.88	1 3.8	32	21 14 56.63	+ 9.429	−16 6 18.3	+14.90	22 27.9

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiameter..	2.4	2.5	2.7	2.9	3.2	3.7	4.3
Hor. Parallax..	6.4	6.6	7.0	7.6	8.5	9.8	11.4

Day of the Month.	5th.	10th.	15th.	20th.	25th.
	″	″	″	″	″
Semidiameter. .	4.9	5.2	5.0	4.6	4.2
Hor. Parallax. .	13.0	13.7	13.3	12.2	11.1

Note.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	21 7 48.69	+ 8.372	−16 15 6.8	+ 7.09	22 28.2
2	21 11 16.32	8.923	16 11 29.4	11.02	22 27.9
3	21 14 56.63	9.429	16 6 18.3	14.90	22 27.9
4	21 18 48.60	9.895	15 59 34.8	18.72	22 28.0
5	21 22 51.27	10.322	15 51 20.2	22.49	22 28.2
6	21 27 3.81	+10.717	−15 41 35.6	+ 26.21	22 28.6
7	21 31 25.44	11.080	15 30 22.4	29.88	22 29.1
8	21 35 55.45	11.416	15 17 41.7	33.51	22 29.8
9	21 40 33.21	11.727	15 3 34.5	37.08	22 30.6
10	21 45 18.14	12.014	14 48 2.1	40.62	22 31.5
11	21 50 9.69	+12.279	−14 31 5.3	+ 44.11	22 32.5
12	21 55 7.40	12.527	14 12 45.2	47.56	22 33.6
13	22 0 10.86	12.758	13 53 2.8	50.97	22 34.9
14	22 5 19.70	12.975	13 31 59.1	54.33	22 36.2
15	22 10 33.55	13.178	13 9 35.1	57.66	22 37.5
16	22 15 52.15	+13.370	−12 45 51.5	+ 60.96	22 38.9
17	22 21 15.22	13.552	12 20 49.3	64.22	22 40.4
18	22 26 42.55	13.725	11 54 29.3	67.44	22 42.0
19	22 32 13.95	13.891	11 26 52.4	70.63	22 43.7
20	22 37 49.25	14.050	10 57 59.4	73.78	22 45.4
21	22 43 28.33	+14.206	−10 27 51.1	+ 76.91	22 47.2
22	22 49 11.09	14.357	9 56 28.2	80.00	22 49.0
23	22 54 57.45	14.506	9 23 51.6	83.05	22 50.9
24	23 0 47.36	14.653	8 50 2.1	86.07	22 52.8
25	23 6 40.79	14.800	8 15 0.4	89.06	22 54.8
26	23 12 37.77	+14.947	− 7 38 47.3	+ 92.02	22 56.9
27	23 18 38.27	15.095	7 1 23.6	94.94	22 59.0
28	23 24 42.35	15.245	6 22 50.3	97.82	23 1.2
29	23 30 50.08	15.399	5 43 8.3	100.67	23 3.5
30	23 37 1.52	15.555	5 2 18.4	103.48	23 5.8
31	23 43 16.78	+15.717	− 4 20 21.6	+106.24	23 8.2
32	23 49 35.98	+15.883	− 3 37 19.3	+108.95	23 10.6

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiameter .	3.8	3.5	3.3	3.1	2.9	2.8	2.7
Hor. Parallax .	10.1	9.3	8.6	8.1	7.7	7.3	7.0

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	23 49 35.98	+15.883	− 3 37 19.3	+108.95	23 10.6
2	23 55 59.22	16.055	2 53 12.6	111.60	23 13.1
3	0 2 26.66	16.233	2 8 2.9	114.19	23 15.7
4	0 8 58.47	16.418	1 21 51.8	116.72	23 18.4
5	0 15 34.78	16.610	− 0 34 40.9	119.17	23 21.1
6	0 22 15.79	+16.809	+ 0 13 27.7	+121.53	23 23.9
7	0 29 1.68	17.016	1 2 31.6	123.78	23 26.8
8	0 35 52.62	17.230	1 52 28.3	125.93	23 29.8
9	0 42 48.79	17.452	2 43 15.0	127.94	23 32.9
10	0 49 50.35	17.680	3 34 48.0	129.79	23 36.1
11	0 56 57.45	+17.914	+ 4 27 3.5	+131.47	23 39.4
12	1 4 10.25	18.153	5 19 56.8	132.94	23 42.8
13	1 11 28.82	18.395	6 13 22.9	134.19	23 46.2
14	1 18 53.22	18.638	7 7 15.8	135.18	23 49.8
15	1 26 23.45	18.881	8 1 28.9	135.87	23 53.5
16	1 33 59.47	+19.119	+ 8 55 54.7	+136.22	23 57.3
17	1 41 41.10	19.349	9 50 24.6	136.20	
18	1 49 28.14	19.569	10 44 49.3	135.78	0 1.1
19	1 57 20.26	19.771	11 38 58.8	134.93	0 5.0
20	2 5 16.98	19.952	12 32 42.1	133.59	0 9.0
21	2 13 17.75	+20.107	+13 25 47.0	+131.74	0 13.1
22	2 21 21.88	20.232	14 18 1.8	129.40	0 17.3
23	2 29 28.57	20.319	15 9 13.9	126.52	0 21.4
24	2 37 36.86	20.365	15 59 10.4	123.11	0 25.6
25	2 45 45.74	20.367	16 47 39.2	119.20	0 29.9
26	2 53 54.10	+20.321	+17 34 28.1	+114.80	0 34.1
27	3 2 0.76	20.226	18 19 26.1	109.96	0 38.3
28	3 10 4.52	20.078	19 2 23.2	104.74	0 42.4
29	3 18 4.13	19.881	19 43 10.6	99.17	0 46.4
30	3 25 58.41	19.634	20 21 41.3	93.34	0 50.4
31	3 33 46.18	+19.339	+20 57 49.4	+ 87.30	0 54.3
32	3 41 26.30	+18.998	+21 31 30.6	+ 81.11	0 58.0

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter . .	2.6	2.5	2.5	2.5	2.6	2.8
Hor Parallax . . .	6.8	6.7	6.6	6.7	7.0	7.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	3 33 46.18	+19.339	+20 57 49.4	+87.30	0 54.3
2	3 41 26.30	18.998	21 31 30.6	81.11	0 58.0
3	3 48 57.71	18.613	22 2 42.2	74.85	1 1.6
4	3 56 19.39	18.188	22 31 23.0	68.55	1 5.0
5	4 3 30.42	17.726	22 57 32.7	62.27	1 8.2
6	4 10 29.96	+17.230	+23 21 12.5	+56.06	1 11.3
7	4 17 17.19	16.702	23 42 24.4	49.95	1 14.1
8	4 23 51.38	16.144	24 1 11.1	43.96	1 16.7
9	4 30 11.86	15.558	24 17 35.9	38.13	1 19.1
10	4 36 17.97	14.947	24 31 42.8	32.47	1 21.3
11	4 42 9.14	+14.313	+24 43 36.0	+26.99	1 23.2
12	4 47 44.80	13.655	24 53 19.9	21.70	1 24.8
13	4 53 4.39	12.975	25 0 59.3	16.62	1 26.2
14	4 58 7.42	12.274	25 6 39.1	11.72	1 27.3
15	5 2 53.39	11.552	25 10 23.7	7.03	1 28.1
16	5 7 21.81	+10.811	+25 12 18.1	+ 2.54	1 28.6
17	5 11 32.21	10.052	25 12 27.2	− 1.76	1 28.8
18	5 15 24.16	9.273	25 10 55.2	5.87	1 28.7
19	5 18 57.20	8.478	25 7 47.2	9.78	1 28.3
20	5 22 10.95	7.666	25 3 7.4	13.51	1 27.6
21	5 25 5.03	+ 6.839	+24 57 0.3	−17.06	1 26.5
22	5 27 39.12	5.999	24 49 30.1	20.43	1 25.1
23	5 29 52.91	5.149	24 40 41.2	23.62	1 23.4
24	5 31 46.20	4.291	24 30 37.6	26.65	1 21.3
25	5 33 18.84	3.428	24 19 23.5	29.49	1 18.9
26	5 34 30.76	+ 2.565	+24 7 3.5	−32.15	1 16.1
27	5 35 22.01	1.707	23 53 42.0	34.62	1 13.0
28	5 35 52.79	0.860	23 39 23.3	36.91	1 9.6
29	5 36 3.40	+ 0.028	23 24 11.9	39.00	1 5.8
30	5 35 54.33	− 0.780	23 8 13.1	40.86	1 1.7
31	5 35 26.23	− 1.556	+22 51 32.4	−42.48	0 57.3
32	5 34 40.00	− 2.291	+22 34 15.4	−43.84	0 52.6

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	5 34 40.00	−2.291	+22 34 15.4	−43.84	0 52.6
2	5 33 36.65	2.979	22 16 28.9	44.95	0 47.6
3	5 32 17.48	3.608	21 58 19.6	45.76	0 42.4
4	5 30 43.98	4.172	21 39 55.2	46.21	0 36.9
5	5 28 57.83	4.661	21 21 24.3	46.31	0 31.2
6	5 27 0.90	−5.069	+21 2 55.5	−46.03	0 25.3
7	5 24 55.21	5.388	20 44 38.1	45.34	0 19.3
8	5 22 42.98	5.615	20 26 42.2	44.24	0 13.2
9	5 20 26.48	5.744	20 9 17.8	42.72	0 7.0
10	5 18 8.06	5.775	19 52 35.1	40.77	0 0.8 23 54.6
11	5 15 50.06	−5.709	+19 36 44.3	−38.40	23 48.4
12	5 13 34.81	5.546	19 21 55.1	35.64	23 42.3
13	5 11 24.61	5.289	19 8 16.6	32.51	23 36.3
14	5 9 21.62	4.946	18 55 57.5	29.04	23 30.5
15	5 7 27.83	4.523	18 45 5.0	25.29	23 24.9
16	5 5 45.12	−4.025	+18 35 45.4	−21.31	23 19.4
17	5 4 15.17	3.461	18 28 3.7	17.14	23 14.3
18	5 2 59.44	2.840	18 22 3.8	12.83	23 9.3
19	5 1 59.22	2.170	18 17 48.4	8.45	23 4.6
20	5 1 15.60	1.458	18 15 18.3	− 4.06	23 0.3
21	5 0 49.50	−0.712	+18 14 33.4	+ 0.30	23 56.2
22	5 0 41.65	+0.062	18 15 32.2	4.58	22 52.5
23	5 0 52.63	0.857	18 18 12.4	8.74	22 49.0
24	5 1 22.90	1.668	18 22 30.6	12.75	22 45.9
25	5 2 12.78	2.491	18 28 22.6	16.55	22 43.1
26	5 3 22.52	+3.321	+18 35 43.1	+20.12	22 40.6
27	5 4 52.25	4.156	18 44 26.4	23.44	22 38.5
28	5 6 42.04	4.994	18 54 26.2	26.49	22 36.7
29	5 8 51.95	5.832	19 5 35.5	29.24	22 35.2
30	5 11 21.99	6.670	19 17 47.0	31.67	22 34.1
31	5 14 12.09	+7.505	+19 30 52.9	+33.77	22 33.3
32	5 17 22.23	+8.339	+19 44 45.0	+35.52	22 32.9

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter . . .	3.1	3.5	3.9	4.4	5.0	5.5
Hor. Parallax . . .	8.2	9.2	10.3	11.7	13.1	14.5

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
	″	″	″	″	″	″
Semidiameter . . .	5.9	6.1	5.9	5.5	5.0	4.5
Hor. Parallax . . .	15.6	16.1	15.7	14.7	13.3	11.8

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	5 14 12.09	+ 7.505	+19 30 52.9	+33.77	22 33.3
2	5 17 22.23	8.339	19 44 45.0	35.52	22 32.9
3	5 20 52.36	9.171	19 59 14.8	36.90	22 32.7
4	5 24 42.40	9.999	20 14 13.4	37.91	22 32.9
5	5 28 52.28	10.824	20 29 31.4	38.53	22 33.5
6	5 33 21.91	+11.645	+20 44 59.4	+38.74	22 34.3
7	5 38 11.18	12.460	21 0 27.3	38.52	22 35.5
8	5 43 19.96	13.271	21 15 44.7	37.86	22 37.0
9	5 48 48.12	14.075	21 30 41.0	36.75	22 38.8
10	5 54 35.47	14.869	21 45 5.1	35.17	22 41.0
11	6 0 41.75	+15.652	+21 58 45.3	+33.10	22 43.5
12	6 7 6.62	16.418	22 11 29.7	30.53	22 46.2
13	6 13 49.66	17.165	22 23 6.6	27.46	22 49.3
14	6 20 50.35	17.887	22 33 24.0	23.90	22 52.6
15	6 28 8.00	18.578	22 42 9.8	19.83	22 56.2
16	6 35 41.78	+19.231	+22 49 12.0	+15.27	23 0.1
17	6 43 30.73	19.841	22 54 19.2	10.24	23 4.2
18	6 51 33.72	20.399	22 57 20.5	+ 4.79	23 8.6
19	6 59 49.40	20.898	22 58 6.2	− 1.04	23 13.1
20	7 8 16.31	21.333	22 56 27.9	7.21	23 17.8
21	7 16 52.84	+21.698	+22 52 18.1	−13.64	23 22.6
22	7 25 37.22	21.988	22 45 31.8	20.25	23 27.5
23	7 34 27.65	22.202	22 36 5.2	26.97	23 32.5
24	7 43 22.31	22.339	22 23 57.0	33.71	23 37.5
25	7 52 19.34	22.400	22 9 7.5	40.40	23 42.5
26	8 1 16.96	+22.390	+21 51 39.1	−46.94	23 47.5
27	8 10 13.50	22.311	21 31 36.0	53.28	23 52.5
28	8 19 7.40	22.171	21 9 3.6	59.36	23 57.4
29	8 27 57.27	21.976	20 44 9.2	65.12	
30	8 36 41.87	21.734	20 17 0.5	70.54	0 2.2
31	8 45 20.20	+21.453	+19 47 46.1	−75.59	0 6.9
32	8 53 51.36	+21.139	+19 16 35.1	−80.26	0 11.5

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	8 53 51.36	+21.139	+19 16 35.1	− 80.26	0 11.5
2	9 2 14.67	20.800	18 43 36.9	84.53	0 16.0
3	9 10 29.61	20.442	18 9 0.9	88.42	0 20.3
4	9 18 35.80	20.071	17 32 56.0	91.93	0 24.5
5	9 26 32.96	19.692	16 55 31.2	95.08	0 28.5
6	9 34 20.99	+19.310	+16 16 55.0	− 97.88	0 32.4
7	9 41 59.84	18.927	15 37 15.6	100.35	0 36.1
8	9 49 29.52	18.547	14 56 40.8	102.51	0 39.6
9	9 56 50.12	18.171	14 15 17.4	104.39	0 43.0
10	10 4 1.78	17.802	13 33 12.1	106.00	0 46.3
11	10 11 4.69	+17.442	+12 50 31.3	−107.36	0 49.4
12	10 17 59.06	17.090	12 7 20.8	108.48	0 52.4
13	10 24 45.11	16.749	11 23 45.9	109.40	0 55.2
14	10 31 23.08	16.417	10 39 51.4	110.11	0 57.8
15	10 37 53.22	16.096	9 55 42.0	110.64	1 0.4
16	10 44 15.78	+15.785	+ 9 11 21.9	−111.00	1 2.9
17	10 50 31.00	15.485	8 26 55.1	111.20	1 5.2
18	10 56 39.13	15.194	7 42 25.2	111.26	1 7.4
19	11 2 40.40	14.913	6 57 55.5	111.18	1 9.4
20	11 8 35.03	14.641	6 13 29.4	110.97	1 11.4
21	11 14 23.22	+14.377	+ 5 29 9.9	−110.64	1 13.3
22	11 20 5.19	14.121	4 44 59.7	110.19	1 15.0
23	11 25 41.10	13.872	4 1 1.5	109.64	1 16.7
24	11 31 11.11	13.630	3 17 17.9	108.98	1 18.2
25	11 36 35.37	13.394	2 33 51.4	108.22	1 19.7
26	11 41 54.02	+13.162	+ 1 50 44.4	−107.36	1 21.0
27	11 47 7.15	12.933	1 7 59.0	106.41	1 22.3
28	11 52 14.85	12.708	+ 0 25 37.6	105.36	1 23.5
29	11 57 17.18	12.486	− 0 16 17.3	104.21	1 24.6
30	12 2 14.19	12.264	0 57 43.7	102.97	1 25.6
31	12 7 5.87	+12.043	− 1 38 39.2	−101.64	1 26.5
32	12 11 52.23	+11.820	− 2 19 1.5	−100.21	1 27.3

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
	″	″	″	″	″	″
Semidiameter . . .	3.9	3.5	3.1	2.8	2.6	2.5
Hor. Parallax . . .	10.4	9.2	8.2	7.4	6.9	6.6

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
	″	″	″	″	″	″
Semidiameter . . .	2.5	2.5	2.5	2.6	2.7	2.8
Hor. Parallax . . .	6.6	6.6	6.7	6.9	7.2	7.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 11 52.23	+11.820	− 2 19 1.5	−100.21	1 27.3
2	12 16 33.20	11.594	2 58 48.3	98.67	1 28.1
3	12 21 8.73	11.366	3 37 57.0	97.04	1 28.7
4	12 25 38.71	11.132	4 16 25.2	95.29	1 29.3
5	12 30 2.98	10.890	4 54 10.0	93.42	1 29.7
6	12 34 21.36	+10.640	− 5 31 8.7	−91.44	1 30.1
7	12 38 33.62	10.380	6 7 18.3	89.33	1 30.3
8	12 42 39.51	10.108	6 42 35.6	87.08	1 30.5
9	12 46 38.70	9.822	7 16 57.0	84.68	1 30.5
10	12 50 30.83	9.519	7 50 18.8	82.12	1 30.4
11	12 54 15.46	+ 9.197	− 8 22 37.0	−79.38	1 30.2
12	12 57 52.10	8.853	8 53 47.3	76.44	1 29.9
13	13 1 20.20	8.482	9 23 44.7	73.30	1 29.4
14	13 4 39.13	8.086	9 52 24.1	69.93	1 28.8
15	13 7 48.17	7.660	10 19 39.6	66.31	1 28.0
16	13 10 46.56	+ 7.199	−10 45 24.9	−62.42	1 27.0
17	13 13 33.42	6.699	11 9 33.1	58.22	1 25.8
18	13 16 7.78	6.157	11 31 56.5	53.67	1 24.4
19	13 18 28.59	5.570	11 52 26.4	48.76	1 22.8
20	13 20 34.72	4.932	12 10 53.6	43.44	1 21.0
21	13 22 24.91	+ 4.242	−12 27 7.8	−37.67	1 18.9
22	13 23 57.87	3.496	12 40 57.7	31.40	1 16.4
23	13 25 12.23	2.691	12 52 10.9	24.61	1 13.7
24	13 26 6.55	1.825	13 0 34.5	17.25	1 10.7
25	13 26 39.38	+ 0.901	13 5 54.0	9.27	1 7.3
26	13 26 49.33	− 0.082	−13 7 54.6	− 0.67	1 3.5
27	13 26 35.06	1.115	13 6 21.1	+ 8.57	0 59.3
28	13 25 55.45	2.192	13 0 58.1	18.44	0 54.7
29	13 24 49.60	3.299	12 51 31.3	28.88	0 49.7
30	13 23 17.02	4.416	12 37 47.9	39.81	0 44.2
31	13 21 17.72	− 5.522	−12 19 37.9	+ 51.07	0 38.3
32	13 18 52.34	− 6.583	−11 56 55.8	+ 62.44	0 31.9

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter . . .	3.0	3.2	3.4	3.7	4.1	4.5
Hor. Parallax . . .	7.9	8.4	9.0	9.8	10.8	11.9

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.
	h m s	s	° ′ ″	″
1	13 21 17.72	− 5.522	−12 19 37.9	+ 51.07
2	13 18 52.34	6.583	11 56 55.8	62.44
3	13 16 2.36	7.566	11 29 42.4	73.62
4	13 12 50.14	8.429	10 58 6.3	84.27
5	13 9 19.04	9.132	10 22 25.4	93.93
6	13 5 33.44	− 9.632	− 9 43 9.2	+102.15
7	13 1 38.62	9.892	9 0 57.6	108.45
8	12 57 40.73	9.885	8 16 42.2	112.40
9	12 53 46.39	9.597	7 31 23.5	113.69
10	12 50 2.44	9.020	6 46 7.8	112.12
11	12 46 35.60	− 8.173	− 6 2 4.3	+107.69
12	12 43 32.09	7.081	5 20 20.1	100.55
13	12 40 57.32	5.786	4 41 57.2	90.99
14	12 38 55.62	4.333	4 7 48.5	79.44
15	12 37 30.18	2.774	3 38 36.0	66.40
16	12 36 42.90	− 1.160	− 3 14 49.2	+ 52.38
17	12 36 34.57	+ 0.464	2 56 45.8	37.87
18	12 37 4.90	2.055	2 44 31.8	23.32
19	12 38 12.69	3.581	2 38 4.1	+ 9.08
20	12 39 56.07	5.017	2 37 10.9	− 4.53
21	12 42 12.66	+ 6.346	− 2 41 34.5	− 17.29
22	12 44 59.76	7.558	2 50 53.0	29.07
23	12 48 14.49	8.649	3 4 41.2	39.77
24	12 51 53.97	9.620	3 22 32.9	49.35
25	12 55 55.34	10.475	3 44 1 2	57.82
26	13 0 15.91	+11.222	− 4 8 39.8	− 65.22
27	13 4 53.20	11.870	4 36 3.5	71.58
28	13 9 44.94	12.428	5 5 48.3	77.00
29	13 14 49.09	12.906	5 37 32.4	81.54
30	13 20 3.85	13.314	6 10 55.6	85.27
31	13 25 27.68	+13.662	− 6 45 39.6	− 88.28
32	13 30 59.19	+13.957	− 7 21 27.9	− 90.64

Day of the Month.	2d.	7th.	12th.	17th.	22
	″	″	″	″	
Semidiameter . . .	4.9	5.1	4.8	4.2	3
Hor. Parallax . . .	13.0	13.4	12.7	11.1	9

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 30 59.19	+13.957	− 7 21 27.9	−90.64	22 47.5
2	13 36 37.25	14.208	7 58 5.9	92.43	22 49.3
3	13 42 20.87	14.428	8 35 20.6	93.71	22 51.2
4	13 48 9.23	14.604	9 13 0.5	94.54	22 53.1
5	13 54 1.65	14.760	9 50 55.4	94.97	22 55.1
6	13 59 57.56	+14.895	−10 28 56.3	−95.05	22 57.1
7	14 5 56.49	15.013	11 6 55.2	94.82	22 59.2
8	14 11 58.07	15.117	11 44 45.2	94.32	23 1.3
9	14 18 2.00	15.209	12 22 20.5	93.59	23 3.5
10	14 24 8.05	15.293	12 59 35.7	92.63	23 5.7
11	14 30 16.01	+15.370	−13 36 25.5	−91.49	23 7.9
12	14 36 25.76	15.442	14 12 45.9	90.18	23 10.2
13	14 42 37.19	15.511	14 48 33.1	88.73	23 12.4
14	14 48 50.25	15.577	15 23 43.8	87.14	23 14.7
15	14 55 4.88	15.642	15 58 15.0	85.43	23 17.1
16	15 1 21.04	+15.706	−16 32 3.7	−83.62	23 19.4
17	15 7 38.75	15.770	17 5 7.4	81.69	23 21.8
18	15 13 57.99	15.834	17 37 24.1	79.68	23 24.2
19	15 20 18.77	15.899	18 8 51.5	77.58	23 26.6
20	15 26 41.13	15.965	18 39 27.5	75.40	23 29.1
21	15 33 5.10	+16.033	−19 9 10.1	−73.14	23 31.6
22	15 39 30.71	16.102	19 37 57.9	70.82	23 34.1
23	15 45 57.99	16.172	20 5 49.1	68.43	23 36.7
24	15 52 26.96	16.243	20 32 41.8	65.96	23 39.2
25	15 58 57.65	16.315	20 58 34.5	63.42	23 41.8
26	16 5 30.09	+16.388	−21 23 25.4	−60.82	23 44.5
27	16 12 4.30	16.462	21 47 13.5	58.17	23 47.1
28	16 18 40.29	16.537	22 9 57.0	55.45	23 49.8
29	16 25 18.08	16.612	22 31 34.6	52.67	23 52.5
30	16 31 57.67	16.687	22 52 4.7	49.83	23 55.3
31	16 38 39.06	+16.762	−23 11 25.8	−46.92	23 58.1
32	16 45 22.21	+16.835	−23 29 36.6	−43.96	

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	16 38 39.06	+16.762	−23 11 25.8	−46.92	23 58.1
2	16 45 22.21	16.835	23 29 36.6	43.96	
3	16 52 7.12	16.907	23 46 35.6	40.94	0 0.9
4	16 58 53.74	16.978	24 2 21.3	37.86	0 3.7
5	17 5 42.02	17.046	24 16 52.4	34.78	0 6.6
6	17 12 31.92	+17.112	−24 30 7.4	−31.58	0 9.5
7	17 19 23.35	17.174	24 42 5.0	28.27	0 12.4
8	17 26 16.24	17.232	24 52 43.7	24.95	0 15.3
9	17 33 10.47	17.286	25 2 2.2	21.58	0 18.3
10	17 40 5.95	17.335	25 9 59.1	18.15	0 21.3
11	17 47 2.53	+17.378	−25 16 33.1	−14.67	0 24.3
12	17 54 0.07	17.415	25 21 42.9	11.14	0 27.3
13	18 0 58.38	17.444	25 25 27.3	7.55	0 30.3
14	18 7 57.30	17.464	25 27 45.1	3.98	0 33.4
15	18 14 56.60	17.475	25 28 35.2	− 0.24	0 36.5
16	18 21 56.02	+17.475	−25 27 56.3	+ 3.48	0 39.5
17	18 28 55.32	17.464	25 25 47.6	7.25	0 42.6
18	18 35 54.18	17.443	25 22 8.2	11.04	0 45.6
19	18 42 52.28	17.400	25 16 57.4	14.86	0 48.6
20	18 49 49.23	17.342	25 10 14.7	18.70	0 51.6
21	18 56 44.59	+17.268	−25 1 59.5	+22.56	0 54.6
22	19 3 37.92	17.172	24 52 11.8	26.41	0 57.6
23	19 10 28.67	17.053	24 40 51.7	30.26	1 0.5
24	19 17 16.23	16.907	24 27 59.6	34.08	1 3.4
25	19 23 59.94	16.731	24 13 36.3	37.85	1 6.2
26	19 30 39.04	+16.521	−23 57 43.3	+41.55	1 8.9
27	19 37 12.64	16.273	23 40 22.2	45.17	1 11.5
28	19 43 39.79	15.982	23 21 35.6	48.68	1 14.0
29	19 49 59.39	15.642	23 1 26.5	52.03	1 16.4
30	19 56 10.16	15.246	22 39 59.2	55.19	1 18.6
31	20 2 10.70	+14.789	−22 17 18.9	+58.12	1 20.6
32	20 7 59.44	+14.262	−21 53 31.4	+60.76	1 22.5

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
	″	″	″	″	″	″
Semidiameter . . .	2.8	2.6	2.5	2.4	2.3	2.3
Hor. Parallax . . .	7.5	6.9	6.6	6.3	6.2	6.1

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th	31st.
	″	″	″	″	″	″	″
Semidiameter .	2.3	2.3	2.4	2.4	2.5	2.7	3.0
Hor. Parallax .	6.1	6.2	6.3	6.5	6.7	7.2	7.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	15 39 18.71	+11.699	−16 48 43.5	−42.42	20 57.3
2	15 44 0.20	11.758	17 5 32.0	41.60	20 58.1
3	15 48 43.11	11.817	17 22 0.3	40.74	20 59.0
4	15 53 27.42	11.875	17 38 7.7	39.86	20 59.8
5	15 58 13.11	11.932	17 53 53.3	38.94	21 0.7
6	16 3 0.17	+11.989	−18 9 16.4	−37.98	21 1.5
7	16 7 48.58	12.045	18 24 16.1	36.99	21 2.4
8	16 12 38.33	12.101	18 38 51.6	35.96	21 3.3
9	16 17 29.39	12.155	18 53 2.1	34.90	21 4.2
10	16 22 21.73	12.208	19 6 46.8	33.81	21 5.1
11	16 27 15.34	+12.260	−19 20 4.9	−32.69	21 6.0
12	16 32 10.17	12.310	19 32 55.8	31.54	21 7.0
13	16 37 6.20	12.359	19 45 18.8	30.36	21 8.0
14	16 42 3.39	12.407	19 57 13.1	29.16	21 9.1
15	16 47 1.72	12.454	20 8 38.1	27.92	21 10.2
16	16 52 1.14	+12.499	−20 19 33.1	−26.66	21 11.3
17	16 57 1.63	12.543	20 29 57.4	25.37	21 12.4
18	17 2 3.15	12.585	20 39 50.5	24.05	21 13.5
19	17 7 5.66	12.625	20 49 11.8	22.71	21 14.6
20	17 12 9.12	12.664	20 58 0.8	21.35	21 15.7
21	17 17 13.50	+12.701	−21 6 16.9	−19.97	21 16.8
22	17 22 18.75	12.737	21 13 59.7	18.57	21 18.0
23	17 27 24.82	12.771	21 21 8.5	17.15	21 19.1
24	17 32 31.68	12.803	21 27 43.0	15.72	21 20.3
25	17 37 39.29	12.833	21 33 42.7	14.26	21 21.5
26	17 42 47.60	+12.861	−21 39 7.3	−12.78	21 22.7
27	17 47 56.57	12.887	21 43 56.2	11.29	21 23.9
28	17 53 6.16	12.912	21 48 9.2	9.78	21 25.1
29	17 58 16.31	12.935	21 51 45.8	8.26	21 26.3
30	18 3 26.97	12.956	21 54 45.8	6.73	21 27.6
31	18 8 38.11	+12.975	−21 57 8.8	− 5.19	21 28.8
32	18 13 49.67	+12.991	−21 58 54.7	− 3.63	21 30.1

FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	M P
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	
1	18 13 49.67	+12.991	−21 58 54.7	− 3.63	2
2	18 19 1.60	13.005	22 0 3.1	2.07	2
3	18 24 13.84	13.017	22 0 33.9	− 0.50	2
4	18 29 26.33	13.026	22 0 26.8	+ 1.08	2
5	18 34 39.02	13.033	21 59 41.8	2.66	2
6	18 39 51.85	+13.038	−21 58 18.7	+ 4.25	2
7	18 45 4.77	13.040	21 56 17.5	5.84	2
8	18 50 17.72	13.040	21 53 38.0	7.43	2
9	18 55 30.64	13.038	21 50 20.4	9.03	2
10	19 0 43.48	13.034	21 46 24.5	10.62	2
11	19 5 56.18	+13.027	−21 41 50.6	+12.21	2
12	19 11 8.69	13.018	21 36 38.6	13.79	2
13	19 16 20.95	13.006	21 30 48.8	15.37	2
14	19 21 32.90	12.992	21 24 21.3	16.93	2
15	19 26 44.49	12.976	21 17 16.2	18.49	2
16	19 31 55.68	+12.958	−21 9 33.8	+20.04	2
17	19 37 6.42	12.938	21 1 14.3	21.58	2
18	19 42 16.66	12.916	20 52 17.9	23.11	2
19	19 47 26.37	12.893	20 42 44.9	24.63	2
20	19 52 35.49	12.868	20 32 35.8	26.13	2
21	19 57 43.99	+12.842	−20 21 50.8	+27.62	2
22	20 2 51.84	12.814	20 10 30.3	29.09	2
23	20 7 59.00	12.784	19 58 34.6	30.55	2
24	20 13 5.44	12.753	19 46 4.0	31.99	2
25	20 18 11.13	12.722	19 32 59.0	33.42	2
26	20 23 16.04	+12.689	−19 19 20.0	+34.82	2
27	20 28 20.16	12.655	19 5 7.5	36.21	2
28	20 33 23.46	12.620	18 50 21.9	37.58	2
29	20 38 25.91	12.584	18 35 3.8	38.92	2
30	20 43 27.49	12.548	18 19 13.6	40.25	2
31	20 48 28.19	+12.511	−18 2 51.9	+41.55	2
32	20 53 27.99	+12.473	−17 45 59.1	+42.83	2

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiameter .	9.3	8.9	8.6	8.3	8.0	7.8	7.6
Hor. Parallax .	9.6	9.2	8.9	8.6	8.3	8.0	7.8

Day of the Month.	5th.	10th.	15th.	20th.
	″	″	″	″
Semidiameter . .	7.4	7.2	7.0	6.8
Hor. Parallax . .	7.6	7.4	7.2	7.0

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.				
pparent Right cension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
43 27.49	+12.548	−18 19 13.6	+40.25	22 5.3	1	23 11 44.47	+11.445	−6 38 25.5	+68.34	22 31.0
48 28.19	12.511	18 2 51.9	41.55	22 6.3	2	23 16 18.89	11.423	6 10 59.6	68.80	22 31.6
53 27.99	12.473	17 45 59.1	42.83	22 7.4	3	23 20 52.80	11.402	5 43 23.0	69.23	22 32.2
58 26.89	12.435	17 28 35.8	44.09	22 8.4	4	23 25 26.22	11.383	5 15 36.5	69.64	22 32.8
3 24.86	12.396	17 10 42.5	45.33	22 9.4	5	23 29 59.21	11.365	4 47 40.7	70.01	22 33.4
8 21.90	+12.357	−16 52 19.9	+46.54	22 10.4	6	23 34 31.79	+11.348	−4 19 36.3	+70.35	22 34.0
13 18.00	12.318	16 33 28.5	47.75	22 11.4	7	23 39 3.98	11.333	3 51 24.1	70.66	22 34.6
18 13.14	12.278	16 14 9.0	48.89	22 12.3	8	23 43 35.83	11.320	3 23 4.8	70.94	22 35.2
23 7.32	12.239	15 54 22.0	50.02	22 13.3	9	23 48 7.37	11.308	2 54 39.0	71.20	22 35.8
28 0.54	12.197	15 34 8.1	51.13	22 14.2	10	23 52 38.64	11.297	2 26 7.4	71.42	22 36.4
32 52.79	+12.157	−15 13 28.0	+52.21	22 15.1	11	23 57 9.67	+11.288	−1 57 30.8	+71.62	22 36.9
37 44.08	12.117	14 52 22.3	53.26	22 16.0	12	0 1 40.50	11.280	1 28 49.8	71.78	22 37.5
42 34.41	12.077	14 30 51.8	54.28	22 16.9	13	0 6 11.16	11.274	1 0 5.3	71.92	22 38.1
47 23.78	12.037	14 8 57.0	55.28	22 17.8	14	0 10 41.68	11.269	0 31 17.8	72.03	22 38.7
52 12.19	11.997	13 46 38.7	56.24	22 18.7	15	0 15 12.10	11.266	−0 2 28.1	72.11	22 39.2
56 59.65	+11.958	−13 23 57.6	+57.18	22 19.5	16	0 19 42.47	+11.264	+0 26 23.2	+72.16	22 39.8
1 46.18	11.919	13 0 54.3	58.09	22 20.3	17	0 24 12.81	11.264	0 55 15.3	72.18	22 40.3
6 31.79	11.881	12 37 29.5	58.97	22 21.1	18	0 28 43.17	11.265	1 24 7.6	72.18	22 40.9
11 16.48	11.843	12 13 43.8	59.82	22 21.9	19	0 33 13.57	11.268	1 52 59.4	72.14	22 41.4
16 0.28	11.806	11 49 38.0	60.65	22 22.7	20	0 37 44.07	11.273	2 21 50.0	72.08	22 42.0
20 43.20	+11.770	−11 25 12.8	+61.44	22 23.5	21	0 42 14.71	+11.279	+2 50 38.6	+71.98	22 42.6
25 25.27	11.735	11 0 28.8	62.23	22 24.2	22	0 46 45.52	11.287	3 19 24.6	71.85	22 43.2
30 6.50	11.701	10 35 26.8	62.95	22 24.9	23	0 51 16.54	11.297	3 48 7.4	71.70	22 43.7
34 46.93	11.668	10 10 7.3	63.66	22 25.6	24	0 55 47.81	11.308	4 16 46.3	71.52	22 44.3
39 26.57	11.635	9 44 31.1	64.34	22 26.3	25	1 0 19.37	11.321	4 45 20.6	71.32	22 44.9
44 5.45	+11.604	− 9 18 38.8	+65.00	22 27.0	26	1 4 51.26	+11.336	+5 13 49.7	+71.09	22 45.5
48 43.60	11.574	8 52 31.1	65.63	22 27.7	27	1 9 23.52	11.352	5 42 12.8	70.83	22 46.1
53 21.05	11.546	8 26 8.7	66.23	22 28.4	28	1 13 56.20	11.370	6 10 29.2	70.54	22 46.7
57 57.83	11.519	7 59 32.3	66.80	22 29.1	29	1 18 29.32	12.390	6 38 38.4	70.22	22 47.3
2 33.97	11.493	7 32 42.5	67.34	22 29.7	30	1 23 2.94	11.411	7 6 39.5	69.87	22 47.9
7 9.51	+11.468	− 7 5 40.0	+67.85	22 30.4	31	1 27 37.09	+11.434	+7 34 31.9	+69.49	22 48.6
11 44.47	+11.445	− 6 38 25.5	+68.34	22 31.0	32	1 32 11.80	+11.458	+8 2 14.9	+69.08	22 49.2

e Month	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
imeter .	6.5	6.3	6.2	6.1	6.0	5.9	5.8
arallax .	6.7	6.6	6.4	6.3	6.2	6.1	6.0

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter . . .	5.7	5.6	5.5	5.5	5.4	5.3
Hor. Parallax . . .	5.9	5.8	5.7	5.6	5.6	5.5

n + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations re decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	1 27 37.09	+11.434	+ 7 34 31.9	+69.49	22 48.6
2	1 32 11.80	11.458	8 2 14.9	69.08	22 49.2
3	1 36 47.10	11.483	8 29 47.8	68.65	22 49.9
4	1 41 23.04	11.510	8 57 9.9	68.18	22 50.5
5	1 45 59.65	11.539	9 24 20.4	67.69	22 51.2
6	1 50 36.97	+11.569	+ 9 51 18.7	+67.17	22 51.9
7	1 55 15.03	11.601	10 18 4.0	66.61	22 52.6
8	1 59 53.83	11.633	10 44 35.6	66.02	22 53.3
9	2 4 33.43	11.666	11 10 52.8	65.40	22 54.1
10	2 9 13.86	11.701	11 36 54.8	64.76	22 54.8
11	2 13 55.13	+11.737	+12 2 40.8	+64.08	22 55.6
12	2 18 37.28	11.774	12 28 10.2	63.37	22 56.3
13	2 23 20.33	11.812	12 53 22.2	62.63	22 57.1
14	2 28 4.30	11.851	13 18 16.0	61.86	22 57.9
15	2 32 49.22	11.891	13 42 51.0	61.06	22 58.7
16	2 37 35.11	+11.932	+14 7 6.5	+60.23	22 59.5
17	2 42 21.98	11.974	14 31 1.7	59.37	23 0.4
18	2 47 9.86	12.016	14 54 35.9	58.47	23 1.3
19	2 51 58.75	12.059	15 17 48.3	57.55	23 2.2
20	2 56 48.69	12.103	15 40 38.3	56.60	23 3.1
21	3 1 39.69	+12.147	+16 3 5.1	+55.62	23 4.0
22	3 6 31.76	12.192	16 25 8.0	54.62	23 4.9
23	3 11 24.91	12.238	16 46 46.4	53.58	23 5.9
24	3 16 19.17	12.284	17 7 59.5	52.51	23 6.9
25	3 21 14.53	12.330	17 28 46.7	51.41	23 7.9
26	3 26 11.01	+12.376	+17 49 7.2	+50.28	23 8.9
27	3 31 8.61	12.423	18 9 0.3	49.13	23 10.0
28	3 36 7.33	12.470	18 28 25.4	47.95	23 11.0
29	3 41 7.18	12.517	18 47 21.8	46.74	23 12.1
30	3 46 8.15	12.564	19 5 48.7	45.50	23 13.2
31	3 51 10.24	+12.611	+19 23 45.5	+44.23	23 14.3
32	3 56 13.46	+12.658	+19 41 11.6	+42.93	23 15.4

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter . . .	5.3	5.2	5.2	5.1	5.1	5.0
Hor. Parallax . . .	5.5	5.4	5.4	5.3	5.3	5.2

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Me Pa
	Noon.	*Noon.*	*Noon.*	*Noon*	
	h m s	s	° ′ ″	″	
1	3 56 13.46	+12.658	+19 41 11.6	+42.93	23
2	4 1 17.79	12.704	19 58 6.3	41.61	23
3	4 6 23.22	12.750	20 14 28.9	40.26	23
4	4 11 29.73	12.795	20 30 18.9	38.89	23
5	4 16 37.31	12.839	20 45 35.5	37.49	23
6	4 21 45.94	+12.882	+21 0 18.2	+36.06	23
7	4 26 55.60	12.924	21 14 26.2	34.61	23
8	4 32 6.25	12.965	21 27 59.1	33.13	23
9	4 37 17.87	13.005	21 40 56.3	31.63	23
10	4 42 30.43	13.043	21 53 17.2	30.10	23
11	4 47 43.90	+13.080	+22 5 1.3	+28.56	23
12	4 52 58.24	13.116	22 16 8.1	26.99	23
13	4 58 13.41	13.150	22 26 37.0	25.41	23
14	5 3 29.37	13.182	22 36 27.7	23.81	23
15	5 8 46.09	13.212	22 45 39.7	22.19	23
16	5 14 3.51	+13.241	+22 54 12.6	+20.55	23
17	5 19 21.60	13.268	23 2 5.9	18.89	23
18	5 24 40.30	13.292	23 9 19.3	17.22	23
19	5 29 59.57	13.314	23 15 52.5	15.54	23
20	5 35 19.36	13.334	23 21 45.2	13.84	23
21	5 40 39.62	+13.353	+23 26 57.0	+12.13	23
22	5 46 0.30	13.370	23 31 27.7	10.41	23
23	5 51 21.34	13.385	23 35 17.0	8.68	23
24	5 56 42.70	13.397	23 38 24.8	6.95	23
25	6 2 4.32	13.407	23 40 50.9	5.22	23
26	6 7 26.15	+13.414	+23 42 35.2	+ 3.47	23
27	6 12 48.14	13.419	23 43 37.4	+ 1.72	23
28	6 18 10.22	13.422	23 43 57.5	− 0.04	23
29	6 23 32.34	13.423	23 43 35.4	1.80	23
30	6 28 54.45	13.421	23 42 31.2	3.56	23
31	6 34 16.48	+13.417	+23 40 44.7	− 5.32	23
32	6 39 38.39	+13.410	+23 38 16.0	− 7.08	23

Day of the Month.	4th.	9th.	14th.	19th.	24th.
	″	″	″	″	″
Semidiameter . . .	5.0	5.0	5.0	5.0	4.9
Hor. Parallax . . .	5.2	5.2	5.2	5.1	5.1

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	6 34 16.48	+13.417	+23 40 44.7	− 5.32	23 55.5	1	9 15 32.91	+12.372	+17 18 52.3	−53.29	0 33.2
2	6 39 38.39	13.410	23 38 16.0	7.08	23 56.9	2	9 20 29.26	12.325	16 57 19.1	54.47	0 34.2
3	6 45 0.11	13.401	23 35 5.2	8.83	23 58.3	3	9 25 24.48	12.277	16 35 17.8	55.63	0 35.2
4	6 50 21.60	13.390	23 31 12.4	10.58	23 59.8	4	9 30 18.58	12.230	16 12 49.0	56.76	0 36.1
5	6 55 42.78	13.376	23 26 37.6	12.32		5	9 35 11.54	12.183	15 49 53.6	57.86	0 37.1
6	7 1 3.61	+13.360	+23 21 21.0	−14.06	0 1.2	6	9 40 3.39	+12.137	+15 26 32.1	−58.92	0 38.0
7	7 6 24.02	13.342	23 15 22.8	15.78	0 2.6	7	9 44 54.14	12.091	15 2 45.4	59.96	0 38.9
8	7 11 43.97	13.322	23 8 43.2	17.50	0 4.0	8	9 49 43.79	12.046	14 38 34.1	60,97	0 39.8
9	7 17 3.39	13.299	23 1 22.5	19.21	0 5.4	9	9 54 32.36	12.001	14 13 59.0	61.95	0 40.7
10	7 22 22.25	13.274	22 53 20.9	20.91	0 6.8	10	9 59 19.87	11.957	13 49 0.8	62.89	0 41.5
11	7 27 40.49	+13.247	+22 44 38.8	−22.59	0 8.1	11	10 4 6.33	+11.914	+13 23 40.3	−63.81	0 42.3
12	7 32 58.05	13.218	22 35 16.5	24.26	0 9.5	12	10 8 51.77	11.872	12 57 58.2	64.70	0 43.1
13	7 38 14 88	13.187	22 25 14.3	25.91	0 10.8	13	10 13 36.20	11.830	12 31 55.3	65.55	0 43.9
14	7 43 30.94	13.154	22 14 32.7	27.55	0 12.1	14	10 18 19.64	11.790	12 5 32.2	66.37	0 44.7
15	7 48 46.19	13.119	22 3 11.9	29.16	0 13.4	15	10 23 2.13	11.750	11 38 49.8	67.16	0 45.5
16	7 54 0.60	+13.083	+21 51 12.5	−30.77	0 14.7	16	10 27 43.67	+11.711	+11 11 48.7	−67.92	0 46.2
17	7 59 14.12	13.045	21 38 34.9	32.35	0 16.0	17	10 32 24.30	11.674	10 44 29.7	68.65	0 47.0
18	8 4 26.72	13.006	21 25 19.7	33.91	0 17.3	18	10 37 4.05	11.638	10 16 53.6	69.35	0 47.7
19	8 9 38.36	12.966	21 11 27.2	35.45	0 18.5	19	10 41 42.95	11.603	9 49 0.9	70.02	0 48.4
20	8 14 49.01	12.924	20 56 58.0	36.97	0 19.8	20	10 46 21.03	11.569	9 20 52.6	70.66	0 49.1
21	8 19 58.65	+12.881	+20 41 52.7	−38.46	0 21.0	21	10 50 58.32	+11.539	+ 8 52 29.3	−71.27	0 49.8
22	8 25 7.25	12.837	20 26 11.8	39.93	0 22.2	22	10 55 34.86	11.507	8 23 51 8	71.85	0 50.5
23	8 30 14.80	12.793	20 9 55.8	41.38	0 23.4	23	11 0 10.69	11 478	7 55 0.7	72.40	0 51.2
24	8 35 21.28	12.748	19 53 5.3	42.81	0 24.6	24	11 4 45.84	11.450	7 25 56 8	72.92	0 51.8
25	8 40 26 66	12.702	19 35 40.9	44.21	0 25.7	25	11 9 20.34	11.424	6 56 40.8	73.41	0 52.4
26	8 45 30 94	+12.655	+19 17 43.1	−45.59	0 26.8	26	11 13 54 25	+11.400	+ 6 27 13 4	−73.87	0 53.0
27	8 50 34 10	12.608	18 59 12.7	46.94	0 27.9	27	11 18 27 60	11.377	5 57 35 3	74.30	0 53 6
28	8 55 36.13	12.561	18 40 10.2	48.26	0 29.0	28	11 23 0.42	11.355	5 27 47.1	74.71	0 54.2
29	9 0 37.03	12.514	18 20 36.3	49.56	0 30.1	29	11 27 32.76	11.335	4 57 49.7	75.08	0 54.8
30	9 5 36 80	12.466	18 0 31.6	50.83	0 31.2	30	11 32 4.65	11.317	4 27 43.6	75.42	0 55.4
31	9 10 35.42	+12.419	+17 39 56.7	−52.07	0 32.2	31	11 36 36.15	+11.301	+ 3 57 29.8	−75.73	0 56.0
32	9 15 32 91	+12.372	+17 18 52.3	−53.29	0 33.2	32	11 41 7.29	+11.288	+ 3 27 8.9	−76.01	0 56.6

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.	Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
	″	″	″	″	″	″		″	″	″	″	″	″
Semidiameter . . .	4.9	4.9	4.9	4.9	5.0	5.0	Semidiameter . . .	5.0	5.0	5 0	5.1	5 1	5 2
Hor. Parallax . . .	5.1	5.1	5.1	5.1	5 1	5.1	Hor. Parallax . . .	5.2	5.2	5.2	5.2	5.3	5 3

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	11 41 7.29	+11.288	+ 3 27 8.9	−76.01	0 56.6
2	11 45 38.11	11.276	2 56 41.6	76.26	0 57.2
3	11 50 8.65	11.266	2 26 8.6	76.48	0 57.7
4	11 54 38.95	11.257	1 55 30.6	76.67	0 58.3
5	11 59 9.07	11.250	1 24 48.5	76.83	0 58.8
6	12 3 39.03	+11.245	+ 0 54 2.8	−76.96	0 59.4
7	12 8 8.88	11.241	+ 0 23 14.4	77.06	0 59.9
8	12 12 38.66	11.239	− 0 7 36.0	77.13	1 0.5
9	12 17 8.40	11.239	0 38 27.7	77.17	1 1.0
10	12 21 38.16	11.240	1 9 19.9	77.17	1 1.6
11	12 26 7.96	+11.243	− 1 40 11.8	−77.15	1 2.1
12	12 30 37.86	11.247	2 11 2.8	77.09	1 2.7
13	12 35 7.89	11.253	2 41 52.0	77.01	1 3.2
14	12 39 38.09	11.261	3 12 38.8	76.89	1 3.8
15	12 44 8.50	11.271	3 43 22.4	76.74	1 4.4
16	12 48 39.17	+11.282	− 4 14 2.1	−76.56	1 5.0
17	12 53 10.14	11.296	4 44 37.1	76.35	1 5.6
18	12 57 41.45	11.311	5 15 6.8	76.11	1 6.2
19	13 2 13.15	11.328	5 45 30.3	75.84	1 6.7
20	13 6 45.27	11.347	6 15 47.0	75.54	1 7.3
21	13 11 17.86	+11.368	− 6 45 56.0	−75.23	1 7.9
22	13 15 50.97	11.390	7 15 56.7	74.85	1 8.5
23	13 20 24.63	11.414	7 45 48.5	74.46	1 9.1
24	13 24 58.89	11.440	8 15 30.5	74.04	1 9.7
25	13 29 33.78	11.467	8 45 2.1	73.59	1 10.4
26	13 34 9.35	+11.496	− 9 14 22.3	−73.12	1 11.0
27	13 38 45.63	11.527	9 43 30.6	72.59	1 11.7
28	13 43 22.67	11.559	10 12 26.1	72.04	1 12.4
29	13 48 0.50	11.593	10 41 8.1	71.46	1 13.1
30	13 52 39.17	11.628	11 9 35.8	70.85	1 13.8
31	13 57 18.71	+11.665	−11 37 48.5	−70.21	1 14.5
32	14 1 59.15	+11.703	−12 5 45.3	−69.53	1 15.2

Day of the Month.	2d	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter . . .	5.2	5.2	5.3	5.4	5.4	5.5
Hor. Parallax . . .	5.4	5.4	5.5	5.6	5.6	5.7

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Me Pa
	h m s	s	° ′ ″	″	h
1	13 57 18.71	+11.665	−11 37 48.5	−70.21	1
2	14 1 59.15	11.703	12 5 45.3	69.53	1
3	14 6 40.52	11.743	12 33 25.5	68.82	1
4	14 11 22.86	11.784	13 0 48.3	68.08	1
5	14 16 6.19	11.826	13 27 53.0	67.31	1
6	14 20 50.54	+11.869	−13 54 38.6	−66.50	1
7	14 25 35.93	11.913	14 21 4.5	65.66	1
8	14 30 22.40	11.958	14 47 9.8	64.78	1
9	14 35 9.96	12.004	15 12 53.8	63.87	1
10	14 39 58.63	12.051	15 38 15.5	62.93	1
11	14 44 48.43	+12.098	−16 3 14.3	−61.96	1
12	14 49 39.37	12.146	16 27 49.3	60.95	1
13	14 54 31.47	12.195	16 51 59.7	59.91	1
14	14 59 24.75	12.244	17 15 44.8	58.84	1
15	15 4 19.21	12.293	17 39 3.6	57.74	1
16	15 9 14.87	+12.343	−18 1 55.6	−56.60	1
17	15 14 11.73	12.393	18 24 19.9	55.43	1
18	15 19 9.79	12.444	18 46 15.7	54.23	1
19	15 24 9.07	12.495	19 7 42.3	52.99	1
20	15 29 9.56	12.546	19 28 39.0	51.73	1
21	15 34 11.27	+12.597	−19 49 5.0	−50.44	1
22	15 39 14.19	12.647	20 8 59.5	49.13	1
23	15 44 18.32	12.697	20 28 21.9	47.75	1
24	15 49 23.64	12.747	20 47 11.3	46.36	1
25	15 54 30.16	12.797	21 5 27.1	44.94	1
26	15 59 37.87	+12.846	−21 23 8.6	−43.50	1
27	16 4 46.74	12.895	21 40 15.1	42.03	1
28	16 9 56.76	12.942	21 56 46.0	40.53	1
29	16 15 7.91	12.988	22 12 40.5	39.00	1
30	16 20 20.16	13.033	22 27 58.0	37.45	1
31	16 25 33.47	+13.077	−22 42 37.8	−35.87	1
32	16 30 47.82	+13.120	−22 56 39.4	−34.26	1

Day of the Month.	2d.	7th.	12th.	17th.	22d.
	″	″	″	″	″
Semidiameter . . .	5.6	5.6	5.7	5.8	5.9
Hor. Parallax . . .	5.8	5.8	5.9	6.0	6.1

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	16 30 47.82	+13.120	−22 56 39.4	−34.26	1 45.9
2	16 36 3.19	13.161	23 10 2.1	32.63	1 47.2
3	16 41 19.53	13.201	23 22 45.3	30.97	1 48.5
4	16 46 36.79	13.239	23 34 48.5	29.29	1 49.8
5	16 51 54.93	13.275	23 46 11.2	27.58	1 51.1
6	16 57 13.90	+13.309	−23 56 52.7	−25.86	1 52.5
7	17 2 33.64	13.340	24 6 52.6	24.12	1 53.9
8	17 7 54.11	13.369	24 16 10.5	22.36	1 55.3
9	17 13 15.24	13.395	24 24 46.0	20.58	1 56.7
10	17 18 36.99	13.419	24 32 38.6	18.78	1 58.2
11	17 23 59.28	+13.441	−24 39 48.0	−16.98	1 59.6
12	17 29 22.06	13.460	24 46 13.8	15.16	2 1.0
13	17 34 45.25	13.476	24 51 55.8	13.32	2 2.4
14	17 40 8.79	13.489	24 56 53.6	11.48	2 3.9
15	17 45 32.62	13.500	25 1 7.2	9.63	2 5.3
16	17 50 56.66	+13.507	−25 4 36.2	− 7.77	2 6.8
17	17 56 20.85	13.512	25 7 20.5	5.91	2 8.3
18	18 1 45.12	13.514	25 9 19.9	4.04	2 9.8
19	18 7 9.40	13.513	25 10 34.4	2.17	2 11.3
20	18 12 33.63	13.509	25 11 3.9	− 0.30	2 12.7
21	18 17 57.73	+13.502	−25 10 48.5	+ 1.58	2 14.2
22	18 23 21.63	13.493	25 9 48.0	3.45	2 15.6
23	18 28 45.27	13.481	25 8 2.5	5.33	2 17.1
24	18 34 8.59	13.466	25 5 32.1	7.20	2 18.5
25	18 39 31.51	13.448	25 2 16.9	9.07	2 20.0
26	18 44 53.97	+13.427	−24 58 17.1	+10.92	2 21.4
27	18 50 15.89	13.404	24 53 32.8	12.77	2 22.8
28	18 55 37.22	13.378	24 48 4.2	14.61	2 24.2
29	19 0 57.90	13.349	24 41 51.6	16.44	2 25.6
30	19 6 17.85	13.317	24 34 55.2	18.26	2 27.0
31	19 11 37.02	+13.283	−24 27 15.3	+20.06	2 28.4
32	19 16 55.34	+13.246	−24 18 52.3	+21.85	2 29.7

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
	″	″	″	″	″	″
Semidiameter . . .	6.1	6.3	6.4	6.5	6.7	6.8
Hor. Parallax . . .	6.4	6.5	6.6	6.8	6.9	7.1

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 11 37.02	+13.283	−24 27 15.3	+20.06	2 28.4
2	19 16 55.34	13.246	24 18 52.3	21.85	2 29.7
3	19 22 12.76	13.207	24 9 46.6	23.62	2 31.1
4	19 27 29.20	13.166	23 59 58.5	25.37	2 32.4
5	19 32 44.62	13.122	23 49 28.6	27.10	2 33.7
6	19 37 58.95	+13.076	−23 38 17.3	+28.82	2 35.0
7	19 43 12.15	13.027	23 26 25.1	30.51	2 36.3
8	19 48 24.15	12.976	23 13 52.5	32.18	2 37.6
9	19 53 34.92	12.923	23 0 40.1	33.84	2 38.9
10	19 58 44.39	12.868	22 46 48.3	35.46	2 40.1
11	20 3 52.53	+12.812	−22 32 17.9	+37.06	2 41.3
12	20 8 59.30	12.754	22 17 9.4	38.63	2 42.4
13	20 14 4.66	12.694	22 1 23.6	40.17	2 43.5
14	20 19 8.56	12.632	21 45 1.2	41.68	2 44.6
15	20 24 10.98	12.570	21 28 2.8	43.17	2 45.7
16	20 29 11.90	+12.507	−21 10 29.1	+44.63	2 46.8
17	20 34 11.29	12.443	20 52 20.7	46.06	2 47.9
18	20 39 9.12	12.378	20 33 38.4	47.46	2 48.9
19	20 44 5.38	12.312	20 14 22.9	48.83	2 49.9
20	20 49 0.06	12.245	19 54 34.8	50.17	2 50.9
21	20 53 53.13	+12.178	−19 34 15.0	+51.48	2 51.8
22	20 58 44.59	12.111	19 13 24.2	52.75	2 52.7
23	21 3 34.42	12.043	18 52 3.2	54.00	2 53.6
24	21 8 22.64	11.976	18 30 12.6	55.21	2 54.4
25	21 13 9.24	11.908	18 7 53.3	56.39	2 55.2
26	21 17 54.21	+11.840	−17 45 6.0	+57.54	2 56.0
27	21 22 37.56	11.772	17 21 51.5	58.66	2 56.8
28	21 27 19.28	11.704	16 58 10.5	59.75	2 57.6
29	21 31 59.38	11.637	16 34 3.9	60.80	2 58.3
30	21 36 37.88	11.570	16 9 32.3	61.82	2 59.0
31	21 41 14.77	+11.504	−15 44 36.7	+62.81	2 59.7
32	21 45 50.07	+11.437	−15 19 17.7	+63.76	3 0.3

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiameter .	7.0	7.2	7.4	7.6	7.8	8.0	8.3
Hor. Parallax .	7.2	7.4	7.6	7.8	8.0	8.3	8.6

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Me Pa
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h
1	16 52 15.89	+7.705	−22 44 2.9	−14.11	22 8.9	1	18 30 23.65	+8.043	−23 49 9.6	+ 4.04	21
2	16 55 21.03	7.723	22 49 35.2	13.58	22 8.0	2	18 33 36.72	8.046	23 47 25.4	4.66	21
3	16 58 26.60	7.740	22 54 54.6	13.04	22 7.2	3	18 36 49.86	8.048	23 45 26.4	5.28	21
4	17 1 32.58	7.757	23 0 1.0	12.50	22 6.3	4	18 40 3.06	8.050	23 43 12.7	5.89	21
5	17 4 38.96	7.774	23 4 54.2	11.95	22 5.5	5	18 43 16.30	8.052	23 40 44.3	6.50	21
6	17 7 45.75	+7.791	−23 9 34.2	−11.40	22 4.7	6	18 46 29.57	+8.053	−23 38 1.0	+ 7.11	21
7	17 10 52.93	7.807	23 14 1.0	10.85	22 3.9	7	18 49 42.85	8.053	23 35 3.0	7.73	21
8	17 14 0.49	7.822	23 18 14.4	10.29	22 3.1	8	18 52 56.14	8.052	23 31 50.3	8.34	21
9	17 17 8.41	7.837	23 22 14.2	9.72	22 2.3	9	18 56 9.41	8.051	23 28 22.9	8.95	21
10	17 20 16.69	7.852	23 26 0.3	9.15	22 1.5	10	18 59 22.65	8.050	23 24 40.8	9.56	21
11	17 23 25.31	+7.866	−23 29 32.8	− 8.57	22 0.7	11	19 2 35.85	+8.049	−23 20 44.1	+10.17	21
12	17 26 34.26	7.880	23 32 51.5	7.99	21 59.9	12	19 5 48.99	8.047	23 16 32.8	10.78	21
13	17 29 43.54	7.893	23 35 56.4	7.41	21 59.1	13	19 9 2.06	8.044	23 12 7.0	11.38	21
14	17 32 53.12	7.905	23 38 47.3	6.83	21 58.3	14	19 12 15.04	8.040	23 7 26.5	11.98	21
15	17 36 3.00	7.917	23 41 24.1	6.24	21 57.6	15	19 15 27.92	8.035	23 2 31.7	12.58	21
16	17 39 13.16	+7.929	−23 43 46.8	− 5.65	21 56.8	16	19 18 40.69	+8.029	−22 57 22.5	+13.18	21
17	17 42 23.58	7.940	23 45 55.3	5.06	21 56.1	17	19 21 53.33	8.023	22 51 59.0	13.77	21
18	17 45 34.26	7.950	23 47 49.6	4.47	21 55.3	18	19 25 5.83	8.017	22 46 21.2	14.36	22
19	17 48 45.18	7.960	23 49 29.6	3.87	21 54.6	19	19 28 18.19	8.011	22 40 29.2	14.95	21
20	17 51 56.33	7.969	23 50 55.3	3.27	21 53.8	20	19 31 30.38	8.004	22 34 23.1	15.54	21
21	17 55 7.69	+7.978	−23 52 6.6	− 2.67	21 53.1	21	19 34 42.40	+7.997	−22 28 2.9	+16.13	21
22	17 58 19.25	7.986	23 53 3.4	2.07	21 52.3	22	19 37 54.25	7.989	22 21 28.8	16.71	21
23	18 1 31.01	7.993	23 53 45.8	1.47	21 51.6	23	19 41 5.91	7.981	22 14 40.7	17.29	21
24	18 4 42.95	8.000	23 54 13.6	0.86	21 50.8	24	19 44 17.37	7.973	22 7 38.9	17.86	21
25	18 7 55.06	8.007	23 54 26.9	− 0.25	21 50.1	25	19 47 28.63	7.965	22 0 23 3	18.43	21
26	18 11 7.33	+8.014	−23 54 25.6	+ 0.36	21 49.4	26	19 50 39.68	+7.957	−21 52 54.0	+19.00	21
27	18 14 19.74	8.020	23 54 9.7	0.97	21 48.6	27	19 53 50.51	7.948	21 45 11.1	19.56	21
28	18 17 32.30	8.026	23 53 39.1	1.58	21 47.9	28	19 57 1.11	7.938	21 37 14.8	20.12	21
29	18 20 44.97	8.031	23 52 53.8	2.19	21 47.1	29	20 0 11.48	7.928	21 29 5.1	20.68	21
30	18 23 57.76	8.036	23 51 53.8	2.80	21 46.4	30	20 3 21.62	7.918	21 20 42.0	21.24	21
31	18 27 10.66	+8.040	−23 50 39.1	+ 3.42	21 45.7	31	20 6 31.51	+7.907	−21 12 5.7	+21.79	21
32	18 30 23.65	+8.043	−23 49 9.6	+ 4.04	21 44.9	32	20 9 41.14	+7.896	−21 3 16.3	+22.33	21

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.
	″	″	″	″	″	″	″		″	″	″	″
Semidiameter .	2.2	2.2	2.2	2.2	2.3	2.3	2.3	Semidiameter . .	2.3	2.4	2.4	2.4
Hor. Parallax .	3.8	3.8	3.9	3.9	4.0	4.0	4.0	Hor. Parallax . .	4.1	4.2	4.2	4.3

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

	MARCH.						APRIL.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	20 3 21.62	+7.918	−21 20 42.0	+21.24	21 23.6	1	21 39 0.81	+7.486	−15 22 28.9	+35.55	20 56.8
2	20 6 31.51	7.907	21 12 5.7	21.79	21 22.8	2	21 42 0.30	7.471	15 8 11.3	35.91	20 55.9
3	20 9 41.14	7.896	21 3 16.3	22.33	21 22.0	3	21 44 59 44	7.456	14 53 45.1	36.26	20 54.9
4	20 12 50.52	7.885	20 54 13.9	22.87	21 21.2	4	21 47 58.23	7.441	14 39 10.6	36.60	20 53.9
5	20 15 59.63	7.874	20 44 58.6	23.40	21 20.4	5	21 50 56.66	7.426	14 24 27.9	36.94	20 52.9
6	20 19 8.46	+7.862	−20 35 30.5	+23.93	21 19.6	6	21 53 54.73	+7.412	−14 9 37.3	+37.27	20 51.9
7	20 22 17.01	7.850	20 25 49.8	24.46	21 18.8	7	21 56 52.45	7.397	13 54 38.8	37.59	20 51.0
8	20 25 25.27	7.837	20 15 56.6	24.98	21 18.0	8	21 59 49.81	7.382	13 39 32.7	37.90	20 50.0
9	20 28 33.23	7.824	20 5 51.0	25.49	21 17.2	9	22 2 46.81	7.367	13 24 19.2	38.21	20 49.0
10	20 31 40.87	7.811	19 55 33.2	26.00	21 16.3	10	22 5 43.46	7.352	13 8 58.5	38.51	20 48.0
11	20 34 48.19	+7.798	−19 45 3.3	+26.50	21 15.5	11	22 8 39.75	+7.338	−12 53 30.8	+38.80	20 47.0
12	20 37 55.19	7.785	19 34 21.4	26.99	21 14.7	12	22 11 35.69	7.323	12 37 56.3	39.08	20 45.9
13	20 41 1.87	7.771	19 23 27.7	27.47	21 13.8	13	22 14 31.27	7.308	12 22 15.2	39.35	20 44.9
14	20 44 8.20	7.757	19 12 22.3	27.95	21 13.0	14	22 17 26.50	7.293	12 6 27.6	39.61	20 43.9
15	20 47 14.19	7.743	19 1 5.5	28.43	21 12.1	15	22 20 21.38	7.279	11 50 33.8	39.87	20 42.8
16	20 50 19.83	+7.728	−18 49 37.3	+28.90	21 11.3	16	22 23 15.91	+7.265	−11 34 33.9	+40.12	20 41.8
17	20 53 25.12	7.713	18 37 58.0	29.37	21 10.4	17	22 26 10.09	7.251	11 18 28.2	40.36	20 40.8
18	20 56 30.05	7.698	18 26 7.6	29.83	21 9.5	18	22 29 3.93	7.237	11 2 16.8	40.59	20 39.7
19	20 59 34.62	7.683	18 14 6.4	30.28	21 8.7	19	22 31 57.44	7.223	10 45 59.9	40.82	20 38.7
20	21 2 38.82	7.668	18 1 54.4	30.72	21 7.8	20	22 34 50.62	7.209	10 29 37.6	41.04	20 37.7
21	21 5 42.66	+7.653	−17 49 31.8	+31.16	21 6.9	21	22 37 43.47	+7.196	−10 13 10.2	+41.25	20 36.6
22	21 8 46.13	7.637	17 36 58.8	31.59	21 6.0	22	22 40 36.01	7.183	9 56 37.8	41.45	20 35.6
23	21 11 49.24	7.622	17 24 15.5	32.01	21 5.1	23	22 43 28.24	7.170	9 40 0.5	41.65	20 34.5
24	21 14 51.97	7.606	17 11 22.1	32.43	21 4.2	24	22 46 20.16	7.157	9 23 18.6	41.84	20 33.4
25	21 17 54.34	7.591	16 58 18.8	32.84	21 3.3	25	22 49 11.78	7.145	9 6 32.2	42.02	20 32.3
26	21 20 56.35	+7.576	−16 45 5.6	+33.25	21 2.4	26	22 52 3.10	+7.133	−8 49 41.5	+42.20	20 31.2
27	21 23 58.00	7.561	16 31 42.7	33.65	21 1.5	27	22 54 54.14	7.122	8 32 46.6	42.37	20 30.1
28	21 26 59.28	7.546	16 18 10.3	34.04	21 0.6	28	22 57 44.90	7.111	8 15 47.8	42.53	20 29.0
29	21 30 0.20	7.531	16 4 28.6	34.43	20 59.7	29	23 0 35.38	7.100	7 58 45.2	42.68	20 27.9
30	21 33 0.76	7.516	15 50 37.7	34.81	20 58.7	30	23 3 25.59	7.089	7 41 38.9	42.83	20 26.8
31	21 36 0.97	+7.501	−15 36 37.7	+35.18	20 57.7	31	23 6 15.54	+7.078	−7 24 29.2	+42.97	20 25.7
32	21 39 0.81	+7.486	−15 22 28.9	+35.55	20 56.8	32	23 9 5.24	+7.067	−7 7 16.2	+43.10	20 24.6

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st	Day of the Month.	5th.	10th.	15th	20th	25th	30th.
	″	″	″	″	″	″	″		″	″	″	″	″	″
Semidiameter .	2.5	2.5	2.6	2.6	2.7	2.7	2.8	Semidiameter . . .	2.8	2.8	2.9	2.9	3.0	3.0
Hor. Parallax .	4.4	4.4	4.5	4.6	4.7	4.7	4.8	Hor. Parallax . . .	4.9	5.0	5.0	5.1	5.2	5.3

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	23 6 15.54	+7.078	−7 24 29.2	+42.97	20 25.7
2	23 9 5.24	7.067	7 7 16.2	43.10	20 24.6
3	23 11 54.68	7.056	6 50 0.1	43.22	20 23.5
4	23 14 43.86	7.045	6 32 41.2	43.34	20 22.3
5	23 17 32.80	7.034	6 15 19.6	43.45	20 21.2
6	23 20 21.49	+7.024	−5 57 55.6	+43.55	20 20.0
7	23 23 9.94	7.014	5 40 29.4	43.64	20 18.9
8	23 25 58.16	7.004	5 23 1.1	43.72	20 17.7
9	23 28 46.14	6.994	5 5 30.9	43.79	20 16.6
10	23 31 33.88	6.984	4 47 59.1	43.85	20 15.4
11	23 34 21.40	+6.975	−4 30 25.8	+43.91	20 14.3
12	23 37 8.68	6.966	4 12 51.3	43.96	20 13.1
13	23 39 55.74	6.957	3 55 15.7	44.00	20 12.0
14	23 42 42.58	6.948	3 37 39.3	44.03	20 10.8
15	23 45 29.21	6.939	3 20 2.2	44.06	20 9.6
16	23 48 15.63	+6.930	−3 2 24.5	+44.08	20 8.5
17	23 51 1.85	6.922	2 44 46.5	44.09	20 7.3
18	23 53 47.85	6.914	2 27 8.3	44.09	20 6.2
19	23 56 33.67	6.906	2 9 30.1	44.08	20 5.0
20	23 59 19.30	6.898	1 51 52.0	44.07	20 3.8
21	0 2 4.75	+6.890	−1 34 14.4	+44.06	20 2.6
22	0 4 50.03	6.883	1 16 37.2	44.04	20 1.4
23	0 7 35.14	6.876	0 59 0.6	44.01	20 0.2
24	0 10 20.10	6.870	0 41 24.8	43.97	19 59.0
25	0 13 4.90	6.864	0 23 49.9	43.93	19 57.8
26	0 15 49.56	+6.858	−0 6 16.1	+43.88	19 56.6
27	0 18 34.08	6.852	+0 11 16.4	43.82	19 55.4
28	0 21 18.46	6.846	0 28 47.5	43.76	19 54.2
29	0 24 2.71	6.841	0 46 17.0	43.69	19 53.0
30	0 26 46.84	6.836	1 3 44.7	43.61	19 51.8
31	0 29 30.84	+6.831	+1 21 10.5	+43.53	19 50.6
32	0 32 14.73	+6.826	+1 38 34.1	+43.44	19 49.4

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter . . .	3.0	3.1	3.1	3.2	3.3	3.4
Hor. Parallax . . .	5.4	5.5	5.6	5.7	5.8	5.9

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Me Pa
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h
1	0 32 14.73	+6.826	+ 1 38 34.1	+43.44	19
2	0 34 58.51	6.821	1 55 55.4	43.34	19
3	0 37 42.17	6.816	2 13 14.2	43.23	19
4	0 40 25.73	6.812	2 30 30.4	43.11	19
5	0 43 9.17	6.808	2 47 43.8	42.99	19
6	0 45 52.50	+6.803	+ 3 4 54.1	+42.86	19
7	0 48 35.72	6.798	3 22 1.1	42.72	19
8	0 51 18.83	6.794	3 39 4.7	42.57	19
9	0 54 1.83	6.789	3 56 4.8	42.42	19
10	0 56 44.73	6.785	4 13 1.1	42.26	19
11	0 59 27.52	+6.780	+ 4 29 53.4	+42.09	19
12	1 2 10.20	6.776	4 46 41.7	41.91	19
13	1 4 52.77	6.772	5 3 25.7	41.73	19
14	1 7 35.23	6.767	5 20 5.3	41.55	19
15	1 10 17.59	6.763	5 36 40.4	41.36	19
16	1 12 59.85	+6.759	+ 5 53 10.8	+41.17	19
17	1 15 42.01	6.755	6 9 36.3	40.97	19
18	1 18 24.09	6.751	6 25 56.9	40.76	19
19	1 21 6.07	6.747	6 42 12.4	40.54	19
20	1 23 47.96	6.744	6 58 22.7	40.32	19
21	1 26 29.76	+6.740	+ 7 14 27.7	+40.09	19
22	1 29 11.49	6.737	7 30 27.2	39.86	19
23	1 31 53.13	6.733	7 46 21.2	39.62	19
24	1 34 34.70	6.730	8 2 9.5	39.38	19
25	1 37 16.19	6.727	8 17 51.9	39.14	19
26	1 39 57.62	+6.724	+ 8 33 28.3	+38.89	19
27	1 42 38.97	6.721	8 48 58.7	38.63	19
28	1 45 20.22	6.718	9 4 22.8	38.37	19
29	1 48 1.40	6.715	9 19 40.6	38.10	19
30	1 50 42.51	6.711	9 34 51.9	37.83	19
31	1 53 23.54	+6.708	+ 9 49 56.5	+37.55	19
32	1 56 4.48	+6.704	+10 4 54.3	+37.26	19

Day of the Month.	4th.	9th.	14th.	19th.	24th.
	″	″	″	″	″
Semidiameter . . .	3.4	3.5	3.5	3.6	3.6
Hor. Parallax . . .	6.0	6.1	6.2	6.3	6.4

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	1 53 23.54	+6.708	+ 9 49 56.5	+37.55	19 12.2
2	1 56 4.48	6.704	10 4 54.3	37.26	19 11.0
3	1 58 45.34	6.700	10 19 45.2	36.97	19 9.7
4	2 1 26.09	6.696	10 34 29.0	36.67	19 8.4
5	2 4 6.74	6.692	10 49 5.5	36.37	19 7.2
6	2 6 47.29	+6.687	+11 3 34.7	+36.07	19 5.9
7	2 9 27.72	6.682	11 17 56.5	35.76	19 4.7
8	2 12 8.02	6.677	11 32 10.6	35.44	19 3.4
9	2 14 48.19	6.671	11 46 17.0	35.11	19 2.1
10	2 17 28.23	6.665	12 0 15.5	34.77	19 0.8
11	2 20 8.12	+6.659	+12 14 6.1	+34.43	18 59.5
12	2 22 47.86	6.653	12 27 48.6	34.09	18 58.3
13	2 25 27.44	6.646	12 41 23.1	33.75	18 57.0
14	2 28 6.86	6.639	12 54 49.4	33.41	18 55.7
15	2 30 46.12	6.632	13 8 7.2	33.07	18 54.4
16	2 33 25.20	+6.625	+13 21 16.7	+32.72	18 53.1
17	2 36 4.11	6.618	13 34 17.8	32.37	18 51.8
18	2 38 42.83	6.610	13 47 10.4	32.01	18 50.5
19	2 41 21.37	6.602	13 59 54.3	31.65	18 49.2
20	2 43 59.71	6.594	14 12 29.7	31.29	18 47.9
21	2 46 37.87	+6.586	+14 24 56.3	+30.93	18 46.6
22	2 49 15.82	6.577	14 37 14.3	30.56	18 45.3
23	2 51 53.58	6.568	14 49 23.4	30.19	18 44.0
24	2 54 31.11	6.559	15 1 23.6	29.82	18 42.7
25	2 57 8.42	6.550	15 13 14.9	29.45	18 41.3
26	2 59 45.50	+6.540	+15 24 57.1	+29.07	18 40.0
27	3 2 22.34	6.530	15 36 30.4	28.69	18 38.7
28	3 4 58.93	6.519	15 47 54.4	28.31	18 37.4
29	3 7 35.25	6.508	15 59 9.3	27.93	18 36.0
30	3 10 11.30	6.496	16 10 14.9	27.54	18 34.7
31	3 12 47.06	+6.483	+16 21 11.2	+27.15	18 33.3
32	3 15 22.50	+6.469	+16 31 58.1	+26.76	18 32.0

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
	″	″	″	″	″	″
Semidiameter . . .	3.8	3.9	3.9	4.0	4.1	4.2
Hor. Parallax . . .	6.6	6.8	6.9	7.1	7.2	7.4

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 15 22.50	+6.469	+16 31 58.1	+26.76	18 32.0
2	3 17 57.63	6.455	16 42 35.6	26.37	18 30.6
3	3 20 32.42	6.441	16 53 3.6	25.97	18 29.2
4	3 23 6.85	6.427	17 3 22.2	25.57	18 27.9
5	3 25 40.90	6.412	17 13 31.2	25.17	18 26.5
6	3 28 14.56	+6.396	+17 23 30.6	+24.77	18 25.1
7	3 30 47.80	6.378	17 33 20.5	24.37	18 23.7
8	3 33 20.61	6.359	17 43 0.7	23.97	18 22.3
9	3 35 52.98	6.339	17 52 31.3	23.57	18 20.9
10	3 38 24.89	6.318	18 1 52.2	23.17	18 19.5
11	3 40 56.30	+6.297	+18 11 3.5	+22.77	18 18.1
12	3 43 27.22	6.276	18 20 5.3	22.37	18 16.6
13	3 45 57.62	6.255	18 28 57.6	21.97	18 15.2
14	3 48 27.50	6.234	18 37 40.2	21.58	18 13.7
15	3 50 56.83	6.212	18 46 13.4	21.18	18 12.3
16	3 53 25.60	+6.189	+18 54 37.2	+20.79	18 10.8
17	3 55 53.79	6.165	19 2 51.5	20.40	18 9.3
18	3 58 21.38	6.139	19 10 56.4	20.01	18 7.9
19	4 0 48.37	6.112	19 18 52.0	19.62	18 6.4
20	4 3 14.74	6.084	19 26 38.4	19.24	18 4.9
21	4 5 40.47	+6.056	+19 34 15.5	+18.86	18 3.3
22	4 8 5.53	6.028	19 41 43.4	18.48	18 1.8
23	4 10 29.91	6.000	19 49 2.2	18.10	18 0.2
24	4 12 53.58	5.971	19 56 11.9	17.72	17 58.7
25	4 15 16.53	5.941	20 3 12.6	17.35	17 57.1
26	4 17 38.73	+5.909	+20 10 4.3	+16.98	17 55.5
27	4 20 0.16	5.876	20 16 47.1	16.61	17 53.9
28	4 22 20.79	5.842	20 23 21.0	16.24	17 52.3
29	4 24 40.59	5.807	20 29 46.2	15.87	17 50.7
30	4 26 59.53	5.770	20 36 2.6	15.51	17 49.1
31	4 29 17.59	+5.732	+20 42 10.5	+15.15	17 47.4
32	4 31 34.72	+5.693	+20 48 9.7	+14.80	17 45.8

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
	″	″	″	″	″	″
Semidiameter . . .	4.3	4.4	4.5	4.6	4.7	4.9
Hor. Parallax . . .	7.6	7.8	7.9	8.1	8.3	8.6

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. *Noon.*	Var. of R. A. for 1 Hour. *Noon.*	Apparent Declination. *Noon.*	Var. of Decl. for 1 Hour. *Noon.*	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	4 31 34.72	+5.693	+20 48 9.7	+14.80	17 45.8
2	4 33 50.89	5.653	20 54 0.6	14.45	17 44.1
3	4 36 6.08	5.612	20 59 43.0	14.10	17 42.4
4	4 38 20.25	5.570	21 5 17.3	13.76	17 40.7
5	4 40 33.36	5.526	21 10 43.4	13.42	17 38.9
6	4 42 45.39	+5.480	+21 16 1.5	+13.09	17 37.2
7	4 44 56.30	5.432	21 21 11.8	12.77	17 35.4
8	4 47 6.07	5.383	21 26 14.4	12.45	17 33.6
9	4 49 14.66	5.333	21 31 9.5	12.14	17 31.8
10	4 51 22.04	5.282	21 35 57.1	11.84	17 30.0
11	4 53 28.19	+5.230	+21 40 37.5	+11.54	17 28.1
12	4 55 33.06	5.176	21 45 10.8	11.25	17 26.2
13	4 57 36.63	5.121	21 49 37.1	10.96	17 24.3
14	4 59 38.88	5.065	21 53 56.7	10.68	17 22.4
15	5 1 39.78	5.008	21 58 9.6	10.41	17 20.5
16	5 3 39.28	+4.950	+22 2 16.0	+10.15	17 18.5
17	5 5 37.37	4.890	22 6 16.4	9.89	17 16.5
18	5 7 34.00	4.829	22 10 10.6	9.64	17 14.5
19	5 9 29.15	4.767	22 13 59.0	9.40	17 12.5
20	5 11 22.77	4.703	22 17 41.6	9.17	17 10.4
21	5 13 14.83	+4.637	+22 21 18.7	+ 8.94	17 8.3
22	5 15 5.31	4.569	22 24 50.4	8.72	17 6.2
23	5 16 54.15	4.500	22 28 17.0	8.50	17 4.1
24	5 18 41.31	4.429	22 31 38.5	8.29	17 1.9
25	5 20 26.73	4.356	22 34 55.3	8.09	16 59.7
26	5 22 10.39	+4.281	+22 38 7.5	+ 7.90	16 57.5
27	5 23 52.22	4.204	22 41 15.3	7.73	16 55.2
28	5 25 32.18	4.125	22 44 18.9	7.57	16 52.9
29	5 27 10.22	4.044	22 47 18.5	7.41	16 50.6
30	5 28 46.28	3.961	22 50 14.4	7.26	16 48.2
31	5 30 20.32	+3.875	+22 53 6.7	+ 7.12	16 45.8
32	5 31 52.28	+3.787	+22 55 55.7	+ 6.99	16 43.4

Day of the Month.	2d	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter . . .	5.0	5.2	5.4	5.6	5.8	6.0
Hor. Parallax . . .	8.8	9.1	9.4	9.7	10.0	10.4

OCTOBER.

Day of Month.	Apparent Right Ascension. *Noon.*	Var. of R. A. for 1 Hour. *Noon.*	Apparent Declination. *Noon.*	Var. of Decl. for 1 Hour. *Noon.*	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 30 20.32	+3.875	+22 53 6.7	+7.12	16 45.8
2	5 31 52.28	3.787	22 55 55.7	6.99	16 43.4
3	5 33 22.10	3.697	22 58 41.7	6.86	16 40.9
4	5 34 49.73	3.605	23 1 24.8	6.74	16 38.4
5	5 36 15.12	3.510	23 4 5.2	6.63	16 35.9
6	5 37 38.20	+3.413	+23 6 43.3	+6.54	16 33.3
7	5 38 58.94	3.314	23 9 19.3	6.46	16 30.6
8	5 40 17.29	3.213	23 11 53.4	6.39	16 28.0
9	5 41 33.19	3.110	23 14 25.8	6.33	16 25.3
10	5 42 46.59	3.005	23 16 56.8	6.28	16 22.5
11	5 43 57.44	+2.898	+23 19 26.6	+6.23	16 19.8
12	5 45 5.69	2.789	23 21 55.5	6.19	16 17.0
13	5 46 11.30	2.677	23 24 23.5	6.15	16 14.1
14	5 47 14.21	2.563	23 26 50.8	6.12	16 11.2
15	5 48 14.38	2.447	23 29 17.8	6.10	16 8.2
16	5 49 11.75	+2.329	+23 31 44.7	+6.11	16 5.2
17	5 50 6.26	2.210	23 34 11.6	6.12	16 2.1
18	5 50 57.87	2.089	23 36 38.7	6.14	15 59.0
19	5 51 46.52	1.965	23 39 6.1	6.16	15 55.9
20	5 52 32.16	1.838	23 41 34.1	6.19	15 52.7
21	5 53 14.73	+1.709	+23 44 2.7	+6.22	15 49.4
22	5 53 54.16	1.577	23 46 32.1	6.25	15 46.1
23	5 54 30.40	1.442	23 49 2.5	6.29	15 42.7
24	5 55 3.39	1.305	23 51 34.1	6.34	15 39.3
25	5 55 33.05	1.165	23 54 6.9	6.40	15 35.8
26	5 55 59.35	+1.023	+23 56 41.0	+6.46	15 32.3
27	5 56 22.21	0.879	23 59 16.5	6.52	15 28.7
28	5 56 41.58	0.733	24 1 53.5	6.58	15 25.0
29	5 56 57.38	0.584	24 4 32.2	6.64	15 21.3
30	5 57 9.54	0.432	24 7 12.5	6.71	15 17.6
31	5 57 18.03	+0.278	+24 9 54.4	+6.78	15 13.8
32	5 57 22.81	+0.121	+24 12 37.9	+6.85	15 9.9

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
	″	″	″	″	″	″
Semidiameter . . .	6.2	6.4	6.6	6.9	7.2	7.5
Hor. Parallax . . .	10.8	11.2	11.6	12.1	12.6	13.1

NOTE.—The sign + indicates north declinations; the sign – indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 57 22.81	+0.121	+24 12 37.9	+6.85	15 9.9
2	5 57 23.83	−0.037	24 15 23.1	6.92	15 5.9
3	5 57 21.04	0.195	24 18 9.9	6.98	15 1.9
4	5 57 14.43	0.355	24 20 58.2	7.04	14 57.8
5	5 57 3.95	0.516	24 23 48.0	7.10	14 53.6
6	5 56 49.59	−0.678	+24 26 39.1	+7.15	14 49.4
7	5 56 31.33	0.842	24 29 31.4	7.20	14 45.1
8	5 56 9.16	1.006	24 32 24.6	7.24	14 40.8
9	5 55 43.08	1.169	24 35 18.6	7.27	14 36.4
10	5 55 13.12	1.331	24 38 13.2	7.29	14 31.9
11	5 54 39.28	−1.492	+24 41 8.0	+7.29	14 27.4
12	5 54 1.57	1.651	24 44 2.9	7.28	14 22.8
13	5 53 20.01	1.809	24 46 57.6	7.26	14 18.2
14	5 52 34.65	1.966	24 49 51.6	7.23	14 13.4
15	5 51 45.54	2.122	24 52 44.5	7.18	14 8.7
16	5 50 52.71	−2.277	+24 55 36.0	+7.11	14 3.8
17	5 49 56.19	2.430	24 58 25.7	7.03	13 58.9
18	5 48 56.06	2.580	25 1 13.3	6.93	13 53.9
19	5 47 52.40	2.726	25 3 58.3	6.81	13 48.9
20	5 46 45.28	2.868	25 6 40.2	6.67	13 43.9
21	5 45 34.79	−3.006	+25 9 18.6	+6.52	13 38.7
22	5 44 21.01	3.140	25 11 53.1	6.35	13 33.5
23	5 43 4.05	3.269	25 14 23.3	6.16	13 28.3
24	5 41 44.05	3.393	25 16 48.6	5.95	13 23.0
25	5 40 21.11	3.512	25 19 8.5	5.72	13 17.7
26	5 38 55.38	−3.626	+25 21 22.7	+5.47	13 12.3
27	5 37 26.99	3.735	25 23 30.8	5.20	13 6.8
28	5 35 56.13	3.835	25 25 32.4	4.91	13 1.3
29	5 34 22.98	3.927	25 27 27.0	4.61	12 55.8
30	5 32 47.71	4.011	25 29 14.3	4.30	12 50.4
31	5 31 10.45	−4.087	+25 30 53.8	+3.97	12 44.8
32	5 29 31.47	−4.155	+25 32 25.5	+3.63	12 39.2

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 31 10.45	−4.087	+25 30 53.8	+3.97	12 44.8
2	5 29 31.47	4.155	25 32 25.5	3.63	12 39.2
3	5 27 51.03	4.213	25 33 49.1	3.28	12 33.6
4	5 26 9.32	4.261	25 35 4.3	2.93	12 28.0
5	5 24 26.56	4.299	25 36 10.9	2.58	12 22.4
6	5 22 43.00	−4.327	+25 37 8.9	+2.22	12 16.7
7	5 20 58.87	4.345	25 37 58.0	1.86	12 11.0
8	5 19 14.42	4.353	25 38 38.3	1.50	12 5.4
9	5 17 29.89	4.351	25 39 9.8	1.14	11 59.7
10	5 15 45.52	4.340	25 39 32.8	0.79	11 54.0
11	5 14 1.54	−4.319	+25 39 47.3	+0.44	11 48.5
12	5 12 18.19	4.288	25 39 53.5	+0.09	11 42.8
13	5 10 35.71	4.248	25 39 51.4	−0.24	11 37.2
14	5 8 54.29	4.199	25 39 41.5	0.55	11 31.6
15	5 7 14.16	4.142	25 39 24.1	0.85	11 26.0
16	5 5 35.50	−4.077	+25 38 59.6	−1.14	11 20.4
17	5 3 58.50	4.003	25 38 28.4	1.43	11 14.9
18	5 2 23.34	3.922	25 37 50.8	1.69	11 9.4
19	5 0 50.24	3.834	25 37 7.3	1.93	11 3.9
20	4 59 19.34	3.740	25 36 18.4	2.15	10 58.5
21	4 57 50.80	−3.639	+25 35 24.6	−2.34	10 53.2
22	4 56 24.74	3.531	25 34 26.4	2.51	10 47.8
23	4 55 1.32	3.418	25 33 24.3	2.66	10 42.5
24	4 53 40.66	3.300	25 32 18.9	2.79	10 37.3
25	4 52 22.91	3.178	25 31 10.6	2.90	10 32.1
26	4 51 8.15	−3.051	+25 30 0.0	−2.98	10 26.9
27	4 49 56.49	2.919	25 28 47.7	3.04	10 21.8
28	4 48 48.03	2.783	25 27 34.1	3.08	10 16.8
29	4 47 42.86	2.644	25 26 19.7	3.10	10 11.8
30	4 46 41.06	2.503	25 25 5.1	3.10	10 6.9
31	4 45 42.70	−2.359	+25 23 50.9	−3.08	10 2.0
32	4 44 47.84	−2.212	+25 22 37.4	−3.04	9 57.2

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
	″	″	″	″	″	″
Semidiameter . . .	7.7	8.0	8.3	8.6	8.8	8.9
Hor. Parallax . . .	13.6	14.1	14.6	15.0	15.3	15.6

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiameter .	9.0	9.0	8.9	8.8	8.6	8.3	8.0
Hor. Parallax .	15.7	15.8	15.6	15.4	15.0	14.5	14.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Mer Pas
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h
1	8 38 19.97	−1.101	+19 7 29.7	+4.56	13 53.2	1	8 22 9.52	−1.349	+20 9 14.8	+4.77	11
2	8 37 53.27	1.123	19 9 20.1	4.63	13 48.8	2	8 21 37.23	1.341	20 11 8.7	4.72	11
3	8 37 26.05	1.144	19 11 11.9	4.69	13 44.4	3	8 21 5.15	1.332	20 13 1.3	4.66	11
4	8 36 58.35	1.164	19 13 5.2	4.75	13 40.0	4	8 20 33.29	1.322	20 14 52.6	4.61	11
5	8 36 30.16	1.184	19 14 59.8	4.80	13 35.6	5	8 20 1.67	1.311	20 16 42.5	4.55	11
6	8 36 1.51	−1.203	+19 16 55.6	+4.85	13 31.2	6	8 19 30.33	−1.300	+20 18 30.9	+4.49	11
7	8 35 32.42	1.222	19 18 52.6	4.90	13 26.8	7	8 18 59.29	1.287	20 20 17.8	4.42	11
8	8 35 2.90	1.239	19 20 50.8	4.94	13 22.4	8	8 18 28.58	1.273	20 22 3.1	4.35	11
9	8 34 32.99	1.254	19 22 49.8	4.98	13 18.0	9	8 17 58.20	1.258	20 23 46.8	4.28	10
10	8 34 2.71	1.269	19 24 49.7	5.01	13 13.5	10	8 17 28.19	1.242	20 25 28.7	4.21	10
11	8 33 32.08	−1.283	+19 26 50.5	+5.04	13 9.1	11	8 16 58.56	−1.225	+20 27 8.8	+4.14	10
12	8 33 1.10	1.296	19 28 52.0	5.07	13 4.6	12	8 16 29.34	1.208	20 28 47.0	4.06	10
13	8 32 29.82	1.309	19 30 54.0	5.09	13 0.1	13	8 16 0.56	1.190	20 30 23.4	3.98	10
14	8 31 58.26	1.321	19 32 56.5	5.11	12 55.7	14	8 15 32.23	1.171	20 31 57.8	3.90	10
15	8 31 26.43	1.331	19 34 59.4	5.13	12 51.3	15	8 15 4.37	1.150	20 33 30.2	3.81	10
16	8 30 54.37	−1.340	+19 37 2.7	+5.14	12 46.8	16	8 14 37.01	−1.129	+20 35 0.6	+3.72	10
17	8 30 22.09	1.348	19 39 6.1	5.14	12 42.3	17	8 14 10.17	1.107	20 36 28.9	3.63	10
18	8 29 49.62	1.355	19 41 9.5	5.14	12 37.8	18	8 13 43.86	1.085	20 37 55.0	3.54	10
19	8 29 16.99	1.362	19 43 13.0	5.14	12 33.4	19	8 13 18.10	1.062	20 39 18.9	3.45	10
20	8 28 44.24	1.368	19 45 16.4	5.13	12 28.9	20	8 12 52.90	1.038	20 40 40.5	3.36	10
21	8 28 11.37	−1.372	+19 47 19.5	+5.12	12 24.4	21	8 12 28.30	−1.013	+20 42 0.1	+3.27	10
22	8 27 38.40	1.375	19 49 22.3	5.11	12 19.9	22	8 12 4.29	0.987	20 43 17.3	3.18	10
23	8 27 5.37	1.377	19 51 24.8	5.09	12 15.5	23	8 11 40.90	0.961	20 44 32.1	3.08	9
24	8 26 32.32	1.378	19 53 26.8	5.07	12 11.0	24	8 11 18.13	0.935	20 45 44.5	2.98	9
25	8 25 59.26	1.377	19 55 28.2	5.04	12 6.5	25	8 10 56.00	0.908	20 46 54.9	2.88	9
26	8 25 26.21	−1.376	+19 57 28.9	+5.01	12 2.0	26	8 10 34.52	−0.881	+20 48 2.8	+2.78	9
27	8 24 53.19	1.374	19 59 28.9	4.98	11 57.5	27	8 10 13.71	0.853	20 49 8.2	2.67	9
28	8 24 20.24	1.371	20 1 28.1	4.95	11 53.0	28	8 9 53.57	0.824	20 50 11.1	2.57	9
29	8 23 47.38	1.367	20 3 26.3	4.91	11 48.6	29	8 9 34.13	0.795	20 51 11.9	2.48	9
30	8 23 14.62	1.362	20 5 23.5	4.87	11 44.1	30	8 9 15.39	0.766	20 52 10.2	2.38	9
31	8 22 41.99	−1.356	+20 7 19.7	+4.82	11 39.6	31	8 8 57.34	−0.736	+20 53 6.0	+2.28	9
32	8 22 9.52	−1.349	+20 9 14.8	+4.77	11 35.2	32	8 8 40.01	−0.706	+20 53 59.3	+2.18	9

Day of the Month.	3d.	11th.	19th.	27th.
	″	″	″	″
Semidiameter	21.6	21.8	21.9	21.9
Horizontal Parallax . .	2.0	2.0	2.1	2.1

Day of the Month.	4th.	12th.	20th.
	″	″	″
Semidiameter	21.8	21.6	21.3
Horizontal Parallax . .	2.0	2.0	2.0

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.				
Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
8 9 15.39	−0.766	+20 52 10.2	+2.38	9 28.4	1	8 5 56.70	+0.247	+21 1 47.4	−0.81	7 23.4
8 8 57.34	0.736	20 53 6.0	2.28	9 24.2	2	8 6 3.01	0.279	21 1 26.8	0.91	7 19.6
8 8 40.01	0.706	20 53 59.3	2.18	9 20.0	3	8 6 10.09	0.311	21 1 3.9	1.00	7 15.8
8 8 23.42	0.676	20 54 50.3	2.07	9 15.8	4	8 6 17.95	0.343	21 0 38.7	1.10	7 11.9
8 8 7.56	0.645	20 55 38.8	1.97	9 11.6	5	8 6 26.58	0.375	21 0 11.0	1.20	7 8.2
8 7 52.44	−0.614	+20 56 24.8	+1.87	9 7.4	6	8 6 35.97	+0.407	+20 59 41.0	−1.30	7 4.4
8 7 38.07	0.583	20 57 8.3	1.76	9 3.3	7	8 6 46.12	0.439	20 59 8.8	1.40	7 0.6
8 7 24.47	0.551	20 57 49.4	1.66	8 59.1	8	8 6 57.03	0.471	20 58 34.3	1.50	6 56.9
8 7 11.63	0.519	20 58 28.0	1.55	8 55.0	9	8 7 8.71	0.502	20 57 57.4	1.59	6 53.2
8 6 59.56	0.486	20 59 4.1	1.45	8 50.8	10	8 7 21.13	0.533	20 57 18.1	1.69	6 49.5
8 6 48.28	−0.453	+20 59 37.6	+1.34	8 46.7	11	8 7 34.29	+0.564	+20 56 36.5	−1.79	6 45.7
8 6 37.79	0.420	21 0 8.6	1.24	8 42.6	12	8 7 48.18	0.594	20 55 52.6	1.88	6 42.0
8 6 28.09	0.387	21 0 37.1	1.14	8 38.5	13	8 8 2.81	0.624	20 55 6.4	1.98	6 38.3
8 6 19.18	0.354	21 1 3.2	1.03	8 34.5	14	8 8 18.15	0.654	20 54 17.9	2.07	6 34.7
8 6 11.08	0.321	21 1 26.8	0.92	8 30.4	15	8 8 34.21	0.684	20 53 27.2	2.16	6 31.0
8 6 3.79	−0.287	+21 1 47.7	+0.82	8 26.3	16	8 8 50.99	+0.713	+20 52 34.2	−2.26	6 27.3
8 5 57.30	0.253	21 2 6.2	0.71	8 22.3	17	8 9 8.47	0.742	20 51 38.9	2.35	6 23.7
8 5 51.62	0.220	21 2 22.2	0.61	8 18.3	18	8 9 26.64	0.771	20 50 41.4	2.44	6 20.1
8 5 46.75	0.186	21 2 35.8	0.51	8 14.3	19	8 9 45.50	0.800	20 49 41.7	2.54	6 16.5
8 5 42.70	0.152	21 2 46.8	0.40	8 10.3	20	8 10 5.05	0.828	20 48 39.7	2.63	6 12.9
8 5 39.45	−0.118	+21 2 55.3	+0.30	8 6.3	21	8 10 25.27	+0.856	+20 47 35.5	−2.72	6 9.3
8 5 37.01	0.085	21 3 1.3	0.20	8 2.3	22	8 10 46.15	0.884	20 46 29.1	2.81	6 5.7
8 5 35.38	0.051	21 3 4.8	+0.09	7 58.4	23	8 11 7.68	0.911	20 45 20.5	2.90	6 2.1
8 5 34.56	−0.017	21 3 5.8	−0.01	7 54.4	24	8 11 29.87	0.938	20 44 9.8	2.99	5 58.5
8 5 34.54	+0.016	21 3 4.4	0.11	7 50.5	25	8 11 52.69	0.964	20 42 56.9	3.08	5 55.0
8 5 35.32	+0.050	+21 3 0.6	−0.21	7 46.6	26	8 12 16.14	+0.990	+20 41 41.9	−3.17	5 51.5
8 5 36.91	0.083	21 2 54.5	0.31	7 42.7	27	8 12 40.22	1.016	20 40 24.7	3.26	5 47.9
8 5 39.29	0.116	21 2 45.9	0.41	7 38.8	28	8 13 4.92	1.041	20 39 5.4	3.35	5 44.4
8 5 42.46	0.149	21 2 34.9	0.51	7 34.9	29	8 13 30.23	1.066	20 37 44.0	3.44	5 40.9
8 5 46.42	0.182	21 2 21.5	0.61	7 31.1	30	8 13 56.13	1.091	20 36 20.5	3.53	5 37.4
8 5 51.17	+0.214	+21 2 5.6	−0.71	7 27.2	31	8 14 22.62	+1.116	+20 34 54.8	−3.62	5 33.9
8 5 56.70	+0.247	+21 1 47.4	−0.81	7 23.4	32	8 14 49.70	+1.141	+20 33 27.0	−3.71	5 30.4

Day of the Month.	7th.	15th.	23d.	31st.	Day of the Month.	8th.	16th.	24th.	32d.
	″	″	″	″		″	″	″	″
diameter	20.6	20.1	19.6	19.2	Semidiameter	18.7	18.2	17.8	17.4
zontal Parallax . .	1.9	1.9	1.8	1.8	Horizontal Parallax . .	1.8	1.7	1.7	1.6

sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	8 14 22.62	+1.116	+20 34 54.8	−3.62	5 33.9
2	8 14 49.70	1.141	20 33 27.0	3.71	5 30.4
3	8 15 17.37	1.165	20 31 57.1	3.79	5 26.9
4	8 15 45.60	1.189	20 30 25.1	3.88	5 23.5
5	8 16 14.40	1.212	20 28 51.0	3.97	5 20.0
6	8 16 43.78	+1.235	+20 27 14.8	−4.05	5 16.6
7	8 17 13.70	1.258	20 25 36.5	4.14	5 13.1
8	8 17 44.16	1.281	20 23 56.2	4.23	5 9.7
9	8 18 15.16	1.303	20 22 13.8	4.31	5 6.3
10	8 18 46.70	1.325	20 20 29.3	4.40	5 2.9
11	8 19 18.77	+1.346	+20 18 42.7	−4.49	4 59.5
12	8 19 51.34	1.367	20 16 54.1	4.57	4 56.1
13	8 20 24.41	1.388	20 15 3.5	4.66	4 52.7
14	8 20 57.98	1.409	20 13 10.8	4.74	4 49.4
15	8 21 32.06	1.430	20 11 16.1	4.82	4 46.0
16	8 22 6.61	+1.450	+20 9 19.4	−4.91	4 42.7
17	8 22 41.63	1.469	20 7 20.6	4.99	4 39.3
18	8 23 17.12	1.488	20 5 19.8	5.07	4 36.0
19	8 23 53.07	1.507	20 3 17.1	5.16	4 32.6
20	8 24 29.46	1.526	20 1 12.4	5.24	4 29.3
21	8 25 6.29	+1.544	+19 59 5.7	−5.32	4 26.0
22	8 25 43.57	1.562	19 56 57.1	5.40	4 22.7
23	8 26 21.27	1.579	19 54 46.5	5.48	4 19.4
24	8 26 59.38	1.596	19 52 34.0	5.56	4 16.1
25	8 27 37.89	1.613	19 50 19.6	5.64	4 12.8
26	8 28 16.81	+1.630	+19 48 3.3	−5.72	4 9.5
27	8 28 56.13	1.646	19 45 45.1	5.80	4 6.2
28	8 29 35.83	1.662	19 43 25.0	5.89	4 2.9
29	8 30 15.91	1.678	19 41 3.0	5.97	3 59.6
30	8 30 56.36	1.693	19 38 39.2	6.05	3 56.4
31	8 31 37.19	+1.708	+19 36 13.5	−6.13	3 53.1
32	8 32 18.37	+1.723	+19 33 45.9	−6.20	3 49.9

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Me Pa
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h
1	8 32 18.37	+1.723	+19 33 45.9	−6.20	3
2	8 32 59.91	1.738	19 31 16.4	6.27	3
3	8 33 41.81	1.753	19 28 45.0	6.35	3
4	8 34 24.06	1.767	19 26 11.8	6.43	3
5	8 35 6.63	1.781	19 23 36.8	6.50	3
6	8 35 49.53	+1.795	+19 21 0.0	−6.58	3
7	8 36 32.76	1.808	19 18 21.3	6.65	3
8	8 37 16.31	1.821	19 15 40.8	6.72	3
9	8 38 0.17	1.834	19 12 58.5	6.80	3
10	8 38 44.33	1.847	19 10 14.4	6.87	3
11	8 39 28.80	+1.859	+19 7 28.4	−6.94	3
12	8 40 13.55	1.871	19 4 40.7	7.02	3
13	8 40 58.58	1.883	19 1 51.3	7.10	3
14	8 41 43.89	1.894	18 59 0.1	7.17	3
15	8 42 29.47	1.905	18 56 7.3	7.24	3
16	8 43 15.31	+1.916	+18 53 12.7	−7.31	3
17	8 44 1.40	1.926	18 50 16.4	7.38	2
18	8 44 47.74	1.936	18 47 18.4	7.45	2
19	8 45 34.33	1.946	18 44 18.8	7.52	2
20	8 46 21.16	1.956	18 41 17.5	7.59	2
21	8 47 8.21	+1.965	+18 38 14.6	−7.66	2
22	8 47 55.48	1.974	18 35 10.0	7.73	2
23	8 48 42.96	1.983	18 32 3.8	7.79	2
24	8 49 30.66	1.992	18 28 56.1	7.86	2
25	8 50 18.56	2.001	18 25 46.8	7.93	2
26	8 51 6.66	+2.009	+18 22 35.9	−7.99	2
27	8 51 54.97	2.017	18 19 23.4	8.06	2
28	8 52 43.47	2.025	18 16 9.4	8.12	2
29	8 53 32.15	2.032	18 12 53.9	8 18	2
30	8 54 21.01	2.040	18 9 36.8	8.25	2
31	8 55 10.04	+2.047	+18 6 18.2	−8.31	2
32	8 55 59.25	+2.054	+18 2 58.1	−8.37	2

Day of the Month.	2d.	10th.	18th.	26th.
	″	″	″	″
Semidiameter	17.4	17.0	16.6	16.3
Horizontal Parallax . .	1.6	1.6	1.6	1.5

Day of the Month.	3d.	11th.	19th.
	″	″	″
Semidiameter	16.0	15.7	15.5
Horizontal Parallax . .	1.5	1.5	1.5

Note.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	8 55 10.04	+2.047	+18 6 18.2	−8.31	2 14.7
2	8 55 59.25	2.054	18 2 58.1	8.37	2 11.6
3	8 56 48.62	2.061	17 59 36.5	8.43	2 8.5
4	8 57 38.15	2.068	17 56 13.4	8.49	2 5.4
5	8 58 27.84	2.074	17 52 48.9	8.55	2 2.3
6	8 59 17.68	+2.080	+17 49 22.9	−8.61	1 59.2
7	9 0 7.66	2.086	17 45 55.5	8.67	1 56.1
8	9 0 57.78	2.091	17 42 26.6	8.73	1 53.0
9	9 1 48.04	2.097	17 38 56.3	8.79	1 49.9
10	9 2 38.43	2.102	17 35 24.6	8.85	1 46.8
11	9 3 28.94	+2.107	+17 31 51.6	−8.90	1 43.7
12	9 4 19.56	2.112	17 28 17.3	8.96	1 40.6
13	9 5 10.30	2.116	17 24 41.7	9.01	1 37.5
14	9 6 1.14	2.120	17 21 4.8	9.06	1 34.4
15	9 6 52.07	2.124	17 17 26.6	9.12	1 31.3
16	9 7 43.11	+2.128	+17 13 47.2	−9.17	1 28.2
17	9 8 34.24	2.132	17 10 6.4	9.22	1 25.2
18	9 9 25.45	2.135	17 6 24.5	9.27	1 22.1
19	9 10 16.73	2.138	17 2 41.4	9.32	1 19.0
20	9 11 8.08	2.141	16 58 57.2	9.37	1 15.9
21	9 11 59.51	+2.144	+16 55 11.8	−9.42	1 12.8
22	9 12 51.00	2.147	16 51 25.3	9.47	1 9.8
23	9 13 42.55	2.149	16 47 37.7	9.51	1 6.7
24	9 14 34.15	2.151	16 43 49.0	9.56	1 3.6
25	9 15 25.80	2.153	16 39 59.2	9.60	1 0.5
26	9 16 17.51	+2.155	+16 36 8.4	−9.64	0 57.5
27	9 17 9.25	2.157	16 32 16.6	9.69	0 54.4
28	9 18 1.04	2.159	16 28 23.7	9.73	0 51.3
29	9 18 52.86	2.160	16 24 29.8	9.77	0 48.2
30	9 19 44.71	2.161	16 20 34.9	9.81	0 45.2
31	9 20 36.58	+2.162	+16 16 39.1	−9.85	0 42.1
32	9 21 28.47	+2.163	+16 12 42.3	−9.89	0 39.1

Day of the Month.	5th.	13th.	21st.	29th.
	″	″	″	″
Semidiameter	15.2	15.0	14.9	14.9
Horizontal Parallax . .	1.4	1.4	1.4	1.4

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	9 21 28.47	+2.163	+16 12 42.3	− 9.89	0 39.1
2	9 22 20 39	2.163	16 8 44.5	9.93	0 36.0
3	9 23 12.33	2.164	16 4 45.9	9.97	0 32.9
4	9 24 4.27	2.164	16 0 46.4	10.00	0 29.8
5	9 24 56.21	2.164	15 56 46.1	10.04	0 26.8
6	9 25 48.16	+2.164	+15 52 44.9	−10.07	0 23.7
7	9 26 40.10	2.164	15 48 42.9	10.10	0 20.7
8	9 27 32.03	2.163	15 44 40.2	10.13	0 17.6
9	9 28 23.94	2.163	15 40 36.7	10.16	0 14.5
10	9 29 15.84	2.162	15 36 32.5	10.19	0 11.4
11	9 30 7.71	+2.161	+15 32 27.7	−10.22	0 8.4
12	9 30 59.55	2.159	15 28 22.3	10.25	0 5.3
13	9 31 51.35	2.157	15 24 16.2	10.27	0 2.2 23 59.1
14	9 32 43.11	2.155	15 20 9.4	10.29	23 56.1
15	9 33 34.82	2.153	15 16 2.1	10.31	23 53.0
16	9 34 26.48	+2.151	+15 11 54.4	−10.33	23 49.9
17	9 35 18.09	2.149	15 7 46.2	10.35	23 46.8
18	9 36 9.64	2.147	15 3 37.5	10.37	23 43.8
19	9 37 1.12	2.145	14 59 28.3	10.39	23 40.7
20	9 37 52.53	2.142	14 55 18.7	10.41	23 37.6
21	9 38 43.88	+2.139	+14 51 8.6	−10.43	23 34.5
22	9 39 35.17	2.135	14 46 58.1	10.44	23 31.4
23	9 40 26.37	2.132	14 42 47.3	10.46	23 28.3
24	9 41 17.48	2.128	14 38 36.2	10.47	23 25.2
25	9 42 8.50	2.124	14 34 24.8	10.48	23 22.1
26	9 42 59.44	+2.120	+14 30 13.1	−10.49	23 19.1
27	9 43 50.28	2.116	14 26 1.2	10.50	23 16.0
28	9 44 41.02	2.112	14 21 49.1	10.51	23 12.9
29	9 45 31.66	2.108	14 17 36.8	10.52	23 9.8
30	9 46 22.21	2.104	14 13 24.2	10.52	23 6.7
31	9 47 12.64	+2.099	+14 9 11.6	−10.53	23 3.6
32	9 48 2.95	+2.094	+14 4 58.9	−10.53	23 0.5

Day of the Month.	6th.	14th.	22d.	30th.
	″	″	″	″
Semidiameter	14.8	14.8	14.8	14.9
Horizontal Parallax . .	1.4	1.4	1.4	1.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	9 48 2.95	+2.094	+14 4 58.9	−10.53	23 0.5
2	9 48 53.14	2.089	14 0 46.1	10.53	22 57.4
3	9 49 43.21	2.084	13 56 33.3	10.53	22 54.3
4	9 50 33.15	2.078	13 52 20.5	10.53	22 51.2
5	9 51 22.95	2.072	13 48 7.8	10.53	22 48.1
6	9 52 12.61	+2.066	+13 43 55.2	−10.53	22 45.0
7	9 53 2.13	2.060	13 39 42.6	10.52	22 41.9
8	9 53 51.50	2.054	13 35 30.3	10.51	22 38.8
9	9 54 40.71	2.047	13 31 18.2	10.50	22 35.7
10	9 55 29.76	2.040	13 27 6.3	10.49	22 32.5
11	9 56 18.64	+2.033	+13 22 54.6	−10.48	22 29.4
12	9 57 7.35	2.026	13 18 43.2	10.46	22 26.3
13	9 57 55.88	2.019	13 14 32.3	10.45	22 23.2
14	9 58 44.23	2.011	13 10 21.7	10.44	22 20.0
15	9 59 32.40	2.003	13 6 11.5	10.42	22 16.9
16	10 0 20.38	+1.995	+13 2 1.8	−10.40	22 13.7
17	10 1 8.16	1.987	12 57 52.6	10.38	22 10.6
18	10 1 55.74	1.979	12 53 44.0	10.35	22 7.4
19	10 2 43.13	1.970	12 49 35.9	10.33	22 4.3
20	10 3 30.31	1.961	12 45 28.4	10.30	22 1.1
21	10 4 17.27	+1.952	+12 41 21.6	−10.27	21 58.0
22	10 5 4.01	1.943	12 37 15.4	10.24	21 54.8
23	10 5 50.52	1.934	12 33 9.8	10.21	21 51.7
24	10 6 36.82	1.924	12 29 5.0	10.18	21 48.5
25	10 7 22.89	1.915	12 25 1.0	10.15	21 45.3
26	10 8 8.72	+1.905	+12 20 57.8	−10.12	21 42.1
27	10 8 54.33	1.895	12 16 55.5	10.08	21 39.0
28	10 9 39.68	1.885	12 12 54.0	10.04	21 35.8
29	10 10 24.78	1.875	12 8 53.5	10.00	21 32.6
30	10 11 9.63	1.864	12 4 53.9	9.96	21 29.4
31	10 11 54.23	+1.853	+12 0 55.3	− 9.92	21 26.2
32	10 12 38.55	+1.842	+11 56 57.8	− 9.88	21 23.0

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	10 11 54.23	+1.853	+12 0 55.3	−9.92	21 26.2
2	10 12 38.55	1.842	11 56 57.8	9.88	21 23.0
3	10 13 22.60	1.830	11 53 1.4	9.83	21 19.8
4	10 14 6.37	1.818	11 49 6.2	9.78	21 16.6
5	10 14 49.87	1.806	11 45 12.2	9.73	21 13.4
6	10 15 33.07	+1.794	+11 41 19.4	−9.67	21 10.2
7	10 16 15.97	1.782	11 37 28.0	9.62	21 7.0
8	10 16 58.57	1.769	11 33 38.0	9.56	21 3.7
9	10 17 40.87	1.756	11 29 49.3	9.50	21 0.5
10	10 18 22.84	1.743	11 26 2.0	9.44	20 57.2
11	10 19 4.49	+1.730	+11 22 16.2	−9.38	20 54.0
12	10 19 45.82	1.716	11 18 32.1	9.31	20 50.7
13	10 20 26.83	1.702	11 14 49.5	9.24	20 47.4
14	10 21 7.50	1.688	11 11 8.5	9.17	20 44.2
15	10 21 47.82	1.673	11 7 29.2	9.10	20 40.9
16	10 22 27.79	+1.659	+11 3 51.6	−9.03	20 37.6
17	10 23 7.43	1.644	11 0 15.7	8.96	20 34.4
18	10 23 46.70	1.629	10 56 41.5	8.89	20 31.1
19	10 24 25.60	1.614	10 53 9.2	8.81	20 27.8
20	10 25 4.13	1.598	10 49 38.8	8.73	20 24.5
21	10 25 42.30	+1.582	+10 46 10.3	−8.65	20 21.2
22	10 26 20.08	1.566	10 42 43.8	8.57	20 17.9
23	10 26 57.48	1.550	10 39 19.4	8.48	20 14.6
24	10 27 34.49	1.534	10 35 57.0	8.39	20 11.2
25	10 28 11.11	1.517	10 32 36.6	8.30	20 7.9
26	10 28 47.32	+1.500	+10 29 18.4	−8.21	20 4.6
27	10 29 23.12	1.483	10 26 2.4	8.12	20 1.3
28	10 29 58.51	1.466	10 22 48.6	8.03	19 57.9
29	10 30 33.48	1.448	10 19 37.1	7.93	19 54.5
30	10 31 8.02	1.430	10 16 27.9	7.83	19 51.1
31	10 31 42.12	+1.412	+10 13 21.2	−7.73	19 47.8
32	10 32 15.77	+1.393	+10 10 17.0	−7.63	19 44.4

Day of the Month.	7th.	15th.	23d
	″	″	″
Semidiameter	14.9	15.1	15.2
Horizontal Parallax	1.4	1.4	1.4

Day of the Month.	1st.	9th.	17th	25th.
	″	″	″	″
Semidiameter	15.4	15.6	15.9	16.2
Horizontal Parallax	1.5	1.5	1.5	1.5

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

	NOVEMBER.						DECEMBER.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	10 32 15.77	+1.393	+10 10 17.0	−7.63	19 44.4	1	10 45 7.03	+0.710	+9 1 15.8	−3.60	17 59.0
2	10 32 48.98	1.374	10 7 15.2	7.52	19 41.0	2	10 45 23.75	0.682	8 59 51.5	3.43	17 55.3
3	10 33 21.73	1.355	10 4 16.0	7.41	19 37.6	3	10 45 39.83	0.655	8 58 31.2	3.27	17 51.7
4	10 33 54.01	1.336	10 1 19.5	7.30	19 34.2	4	10 45 55.26	0.628	8 57 14.9	3.10	17 48.0
5	10 34 25.82	1.316	9 58 25.7	7.19	19 30.8	5	10 46 10.02	0.601	8 56 2.6	2.93	17 44.3
6	10 34 57.16	+1.296	+ 9 55 34.5	−7.08	19 27.4	6	10 46 24.12	+0.573	+8 54 54.4	−2.76	17 40.6
7	10 35 28.02	1.276	9 52 46.1	6.97	19 23.9	7	10 46 37.55	0.545	8 53 50.3	2.59	17 36.9
8	10 35 58.38	1.255	9 50 0.6	6.85	19 20.5	8	10 46 50.31	0.517	8 52 50.3	2.42	17 33.1
9	10 36 28.24	1.234	9 47 18.0	6.73	19 17.1	9	10 47 2.38	0.489	8 51 54.3	2.25	17 29.4
10	10 36 57.59	1.213	9 44 38.2	6.60	19 13.6	10	10 47 13.77	0.461	8 51 2.7	2.07	17 25.6
11	10 37 26.44	+1.191	+ 9 42 1.5	−6.47	19 10.1	11	10 47 24.47	+0.432	+8 50 15.3	−1.89	17 21.9
12	10 37 54.77	1.169	9 39 27.8	6.35	19 6.7	12	10 47 34.49	0.403	8 49 32.0	1.72	17 18.1
13	10 38 22.57	1.147	9 36 57.1	6.22	19 3.2	13	10 47 43.81	0.374	8 48 53.0	1.54	17 14.3
14	10 38 49.85	1.125	9 34 29.4	6.09	18 59.7	14	10 47 52.44	0.345	8 48 18.3	1.36	17 10.5
15	10 39 16.59	1.103	9 32 4.8	5.96	18 56.2	15	10 48 0.36	0.316	8 47 47.8	1.19	17 6.7
16	10 39 42.79	+1.081	+ 9 29 43.5	−5.83	18 52.7	16	10 48 7.59	+0.287	+8 47 21.6	−1.01	17 2.9
17	10 40 8.45	1.058	9 27 25.4	5.69	18 49.2	17	10 48 14.11	0.257	8 46 59.7	0.83	16 59.1
18	10 40 33.57	1.035	9 25 10.6	5.55	18 45.7	18	10 48 19.91	0.228	8 46 42.1	0.65	16 55.2
19	10 40 58.13	1.012	9 22 59.1	5.41	18 42.1	19	10 48 25.00	0.198	8 46 28.9	0.47	16 51.4
20	10 41 22.12	0.988	9 20 51.0	5.27	18 38.6	20	10 48 29.38	0.168	8 46 20.0	0.28	16 47.5
21	10 41 45.54	+0.964	+ 9 18 46.3	−5.13	18 35.1	21	10 48 33.04	+0.138	+8 46 15.5	−0.10	16 43.6
22	10 42 8.39	0.940	9 16 44.9	4.99	18 31.5	22	10 48 35.98	0.108	8 46 15.4	+0.08	16 39.7
23	10 42 30.66	0.916	9 14 47.0	4.84	18 27.9	23	10 48 38.20	0.078	8 46 19.7	0.27	16 35.8
24	10 42 52.34	0.891	9 12 52.7	4.69	18 24.3	24	10 48 39.71	0.048	8 46 28.4	0.45	16 31.9
25	10 43 13.42	0.866	9 11 2.0	4.54	18 20.8	25	10 48 40.48	+0.017	8 46 41.5	0.64	16 28.0
26	10 43 33.90	+0.841	+ 9 9 15.0	−4.38	18 17.1	26	10 48 40.52	−0.014	+8 46 59.0	+0.82	16 24.1
27	10 43 53.77	0.816	9 7 31.7	4.23	18 13.5	27	10 48 39.83	0.044	8 47 20.9	1.01	16 20.1
28	10 44 13.02	0.790	9 5 52.1	4.08	18 9.9	28	10 48 38.41	0.074	8 47 47.3	1.20	16 16.1
29	10 44 31.65	0.764	9 4 16.2	3.92	18 6.3	29	10 48 36.25	0.105	8 48 18.1	1.38	16 12.2
30	10 44 49.66	0.737	9 2 44.0	3.76	18 2.7	30	10 48 33.36	0.135	8 48 53.3	1.57	16 8.2
31	10 45 7.03	+0.710	+ 9 1 15.8	−3.60	17 59.0	31	10 48 29.74	−0.166	+8 49 33.0	+1.75	16 4.2
32	10 45 23.75	+0.682	+ 8 59 51.5	−3.43	17 55.3	32	10 48 25.39	−0.197	+8 50 17.1	+1.93	16 0.2

Day of the Month.	2d.	10th.	18th.	26th.	Day of the Month.	4th	12th	20th	28th	36th.
	″	″	″	″		″	″	″	″	″
Semidiameter	16.5	16.8	17.2	17.6	Semidiameter . . .	18.0	18.5	18.9	19.4	19.8
Horizontal Parallax . .	1.6	1.6	1.6	1.7	Horizontal Parallax . .	1.7	1.7	1.8	1.8	1.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	14 58 49.75	+0.860	−14 38 51.6	−3.29	20 13.2
2	14 59 10.25	0.849	14 40 9.8	3.23	20 9.6
3	14 59 30.49	0.838	14 41 26.6	3.17	20 6.0
4	14 59 50.46	0.827	14 42 42.0	3.11	20 2.4
5	15 0 10.15	0.815	14 43 55.9	3.05	19 58.8
6	15 0 29.56	+0.803	−14 45 8.3	−2.99	19 55.2
7	15 0 48.69	0.791	14 46 19.2	2.93	19 51.6
8	15 1 7.53	0.779	14 47 28.6	2.87	19 48.0
9	15 1 26.07	0.767	14 48 36.5	2.81	19 44.4
10	15 1 44.31	0.754	14 49 43.0	2.74	19 40.7
11	15 2 2.25	+0.741	−14 50 48.0	−2.68	19 37.1
12	15 2 19.89	0.728	14 51 51.4	2.62	19 33.4
13	15 2 37.21	0.715	14 52 53.2	2.55	19 29.8
14	15 2 54.21	0.702	14 53 53.5	2.48	19 26.1
15	15 3 10.90	0.688	14 54 52.2	2.41	19 22.5
16	15 3 27.26	+0.675	−14 55 49.2	−2.35	19 18.8
17	15 3 43.29	0.661	14 56 44.6	2.28	19 15.1
18	15 3 58.98	0.647	14 57 38.6	2.22	19 11.4
19	15 4 14.34	0.633	14 58 30.9	2.15	19 7.8
20	15 4 29.36	0.619	14 59 21.6	2.08	19 4.1
21	15 4 44.03	+0.605	−15 0 10.7	−2.02	19 0.4
22	15 4 58.35	0.590	15 0 58.1	1.95	18 56.7
23	15 5 12.33	0.575	15 1 43.9	1.88	18 53.0
24	15 5 25.95	0.560	15 2 28.1	1.81	18 49.3
25	15 5 39.21	0.545	15 3 10.7	1.74	18 45.6
26	15 5 52.12	+0.530	−15 3 51.6	−1.68	18 41.8
27	15 6 4.67	0.515	15 4 30.9	1.61	18 38.1
28	15 6 16.85	0.500	15 5 8.5	1.54	18 34.4
29	15 6 28.66	0.485	15 5 44.5	1.47	18 30.7
30	15 6 40.10	0.469	15 6 18.9	1.40	18 26.9
31	15 6 51.17	+0.454	−15 6 51.6	−1.33	18 23.1
32	15 7 1.86	+0.438	−15 7 22.7	−1.26	18 19.3

Day of the Month.	3d.	11th.	19th.	27th.
	″	″	″	″
Semidiameter	7.5	7.6	7.7	7.8
Horizontal Parallax . .	0.9	0.9	0.9	0.9

FEBRUARY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Mer Pas
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h
1	15 7 1.86	+0.438	−15 7 22.7	−1.26	18
2	15 7 12.17	0.422	15 7 52.1	1.19	18
3	15 7 22.10	0.406	15 8 19.8	1.12	18
4	15 7 31.65	0.390	15 8 45.7	1.05	18
5	15 7 40.81	0.374	15 9 10.1	0.98	18
6	15 7 49.58	+0.358	−15 9 32.8	−0.91	18
7	15 7 57.95	0.341	15 9 53.8	0.84	17
8	15 8 5.93	0.324	15 10 13.1	0.77	17
9	15 8 13.50	0.307	15 10 30.7	0.70	17
10	15 8 20.57	0.291	15 10 46.6	0.63	17
11	15 8 27.45	+0.274	−15 11 0.8	−0.56	17
12	15 8 33.83	0.257	15 11 13.2	0.48	17
13	15 8 39.79	0.240	15 11 24.0	0.41	17
14	15 8 45.34	0.223	15 11 33.1	0.34	17
15	15 8 50.48	0.206	15 11 40.5	0.27	17
16	15 8 55.22	+0.189	−15 11 46.2	−0.20	17
17	15 8 59.54	0.172	15 11 50.2	0.13	17
18	15 9 3.45	0.155	15 11 52.6	−0.06	17
19	15 9 6.95	0.137	15 11 53.3	0.00	17
20	15 9 10.03	0.120	15 11 52.3	+0.07	17
21	15 9 12.70	+0.102	−15 11 49.6	+0.14	17
22	15 9 14.96	0.085	15 11 45.3	0.21	16
23	15 9 16.81	0.068	15 11 39.4	0.28	16
24	15 9 18.24	0.051	15 11 31.9	0.35	16
25	15 9 19.27	0.034	15 11 22.7	0.42	16
26	15 9 19.88	+0.017	−15 11 11.9	+0.49	16
27	15 9 20.08	0.000	15 10 59.4	0.56	16
28	15 9 19.87	−0.017	15 10 45.3	0.63	16
29	15 9 19.25	0.034	15 10 29.6	0.69	16
30	15 9 18.22	0.051	15 10 12.3	0.76	16
31	15 9 16.79	−0.068	−15 9 53.5	+0.82	16
32	15 9 14.95	−0.085	−15 9 33.1	+0.89	16

Day of the Month.	4th.	12th.	20th.
	″	″	″
Semidiameter	7.9	8.0	8.1
Horizontal Parallax . .	0.9	0.9	0.9

Note.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 9 18.22	−0.051	−15 10 12.3	+0.76	16 27.4
2	15 9 16.79	0.068	15 9 53.5	0.82	16 23.5
3	15 9 14.95	0.085	15 9 33.1	0.89	16 19.5
4	15 9 12.70	0.102	15 9 11.1	0.96	16 15.5
5	15 9 10.05	0.119	15 8 47.5	1.02	16 11.5
6	15 9 6.99	−0.136	−15 8 22.3	+1.09	16 7.6
7	15 9 3.53	0.153	15 7 55.6	1.15	16 3.6
8	15 8 59.67	0.170	15 7 27.4	1.22	15 59.6
9	15 8 55.41	0.186	15 6 57.6	1.28	15 55.6
10	15 8 50.75	0.202	15 6 26.3	1.34	15 51.6
11	15 8 45.70	−0.219	−15 5 53.5	+1.40	15 47.5
12	15 8 40.26	0.235	15 5 19.2	1.46	15 43.5
13	15 8 34.43	0.251	15 4 43.4	1.52	15 39.5
14	15 8 28.21	0.267	15 4 6.2	1.58	15 35.4
15	15 8 21.60	0.283	15 3 27.5	1.64	15 31.4
16	15 8 14.62	−0.299	−15 2 47.4	+1.70	15 27.4
17	15 8 7.26	0.315	15 2 5.9	1.76	15 23.3
18	15 7 59.53	0.330	15 1 23.1	1.82	15 19.2
19	15 7 51.43	0.345	15 0 38.9	1.87	15 15.1
20	15 7 42.97	0.360	14 59 53.3	1.93	15 11.1
21	15 7 34.16	−0.375	−14 59 6.5	+1.99	15 7.0
22	15 7 25.00	0.389	14 58 18.4	2.04	15 2.9
23	15 7 15.49	0.403	14 57 29.0	2.09	14 58.8
24	15 7 5.64	0.417	14 56 38.3	2.14	14 54.7
25	15 6 55.46	0.431	14 55 46.4	2.19	14 50.6
26	15 6 44.95	−0.445	−14 54 53.4	+2.24	14 46.5
27	15 6 34.10	0.458	14 53 59.2	2.29	14 42.4
28	15 6 22.94	0.471	14 53 3.8	2.33	14 38.2
29	15 6 11.47	0.484	14 52 7.3	2.38	14 34.1
30	15 5 59.69	0.497	14 51 9.7	2.42	14 30.0
31	15 5 47.60	−0.509	−14 50 11.0	+2.47	14 25.9
32	15 5 35.21	−0.521	−14 49 11.3	+2.51	14 21.7

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 5 35.21	−0.521	−14 49 11.3	+2.51	14 21.7
2	15 5 22.53	0.533	14 48 10.5	2.56	14 17.6
3	15 5 9.57	0.545	14 47 8.7	2.60	14 13.4
4	15 4 56.33	0.557	14 46 5.9	2.64	14 9.3
5	15 4 42.82	0.568	14 45 2.1	2.68	14 5.1
6	15 4 29.04	−0.579	−14 43 57.5	+2.72	14 1.0
7	15 4 15.00	0.590	14 42 52.0	2.75	13 56.8
8	15 4 0.70	0.601	14 41 45.6	2.79	13 52.6
9	15 3 46.16	0.611	14 40 38.3	2.82	13 48.4
10	15 3 31.38	0.621	14 39 30.3	2.85	13 44.3
11	15 3 16.38	−0.630	−14 38 21.5	+2.88	13 40.1
12	15 3 1.16	0.639	14 37 12.0	2.91	13 35.9
13	15 2 45.72	0.648	14 36 1.8	2.94	13 31.7
14	15 2 30.08	0.656	14 34 51.0	2.97	13 27.5
15	15 2 14.25	0.664	14 33 39.6	2.99	13 23.3
16	15 1 58.23	−0.671	−14 32 27.5	+3.01	13 19.1
17	15 1 42.03	0.678	14 31 14.9	3.03	13 14.9
18	15 1 25.66	0.685	14 30 1.9	3.05	13 10.7
19	15 1 9.13	0.692	14 28 48.4	3.07	13 6.5
20	15 0 52.45	0.698	14 27 34.4	3.09	13 2.3
21	15 0 35.63	−0.703	−14 26 20.1	+3.11	12 58.1
22	15 0 18.67	0.708	14 25 5.4	3.12	12 53.9
23	15 0 1.59	0.713	14 23 50.4	3.13	12 49.6
24	14 59 44.41	0.718	14 22 35.1	3.14	12 45.4
25	14 59 27.13	0.722	14 21 19.6	3.15	12 41.2
26	14 59 9.74	−0.726	−14 20 3.9	+3.16	12 37.0
27	14 58 52.25	0.730	14 18 48.0	3.17	12 32.8
28	14 58 34.68	0.733	14 17 31.9	3.18	12 28.5
29	14 58 17.04	0.736	14 16 15.7	3.18	12 24.3
30	14 57 59.34	0.738	14 14 59.5	3.18	12 20.1
31	14 57 41.59	−0.740	−14 13 43.3	+3.18	12 15.9
32	14 57 23.79	−0.742	−14 12 27.2	+3.18	12 11.7

Day of the Month.	7th.	15th.	23d.	31st.
	″	″	″	″
Semidiameter	8.4	8.5	8.6	8.6
Horizontal Parallax . .	0.9	1.0	1.0	1.0

Day of the Month.	8th.	16th.	24th.
	″	″	″
Semidiameter	8.7	8.7	8.8
Horizontal Parallax	1.0	1.0	1.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Me Pa
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h
1	14 57 41.59	−0.740	−14 13 43.3	+3.18	12 15.9	1	14 48 54.61	−0.617	−13 37 49.7	+2.36	10
2	14 57 23.79	0.742	14 12 27.2	3.18	12 11.7	2	14 48 39.88	0.608	13 36 53.6	2.31	10
3	14 57 5.95	0.743	14 11 11.1	3.17	12 7.4	3	14 48 25.39	0.599	13 35 58.8	2.26	9
4	14 56 48.09	0.744	14 9 55.1	3.17	12 3.2	4	14 48 11.12	0.589	13 35 5.2	2.21	9
5	14 56 30.22	0.744	14 8 39.2	3.16	11 59.0	5	14 47 57.09	0.579	13 34 12.8	2.15	9
6	14 56 12.35	−0.744	−14 7 23.4	+3.15	11 54.8	6	14 47 43.31	−0.569	−13 33 21.7	+2.10	9
7	14 55 54.48	0.745	14 6 7.9	3.14	11 50.6	7	14 47 29.79	0.558	13 32 31.9	2.04	9
8	14 55 36.62	0.745	14 4 52.7	3.13	11 46.3	8	14 47 16.53	0.547	13 31 43.5	1.99	9
9	14 55 18.76	0.744	14 3 37.8	3.12	11 42.1	9	14 47 3.53	0.536	13 30 56.5	1.93	9
10	14 55 0.93	0.742	14 2 23.1	3.10	11 37.9	10	14 46 50.80	0.524	13 30 10.9	1.87	9
11	14 54 43.14	−0.740	−14 1 8.9	+3.08	11 33.6	11	14 46 38.35	−0.512	−13 29 26.7	+1.81	9
12	14 54 25.40	0.738	13 59 55.1	3.06	11 29.4	12	14 46 26.19	0.500	13 28 44.0	1.75	9
13	14 54 7.72	0.735	13 58 41.8	3.04	11 25.2	13	14 46 14.32	0.488	13 28 2.8	1.69	9
14	14 53 50.11	0.732	13 57 29.0	3.02	11 21.0	14	14 46 2.75	0.476	13 27 23.1	1.63	9
15	14 53 32.58	0.728	13 56 16.8	2.99	11 16.7	15	14 45 51.48	0.463	13 26 44.9	1.57	9
16	14 53 15.13	−0.724	−13 55 5.2	+2.96	11 12.5	16	14 45 40.51	−0.450	−13 26 8.3	+1.50	9
17	14 52 57.77	0.720	13 53 54.2	2.93	11 8.3	17	14 45 29.86	0.437	13 25 33.3	1.43	8
18	14 52 40.53	0.716	13 52 43.9	2.90	11 4.1	18	14 45 19.53	0.424	13 24 59.9	1.36	8
19	14 52 23.40	0.711	13 51 34.3	2.87	10 59.9	19	14 45 9.53	0.411	13 24 28.0	1.30	8
20	14 52 6.39	0.706	13 50 25.5	2.84	10 55.6	20	14 44 59.85	0.397	13 23 57.8	1.23	8
21	14 51 49.50	−0.700	−13 49 17.4	+2.81	10 51.4	21	14 44 50.50	−0.383	−13 23 29.2	+1.16	8
22	14 51 32.75	0.694	13 48 10.1	2.78	10 47.2	22	14 44 41.47	0.369	13 23 2.3	1.09	8
23	14 51 16.16	0.688	13 47 3.7	2.75	10 43.0	23	14 44 32.77	0.355	13 22 37.0	1.02	8
24	14 50 59.72	0.682	13 45 58.2	2.71	10 38.8	24	14 44 24.42	0.341	13 22 13.4	0.95	8
25	14 50 43.44	0.675	13 44 53.6	2.67	10 34.6	25	14 44 16.41	0.327	13 21 51.5	0.88	8
26	14 50 27.32	−0.668	−13 43 50.0	+2.63	10 30.4	26	14 44 8.74	−0.313	−13 21 31.3	+0.81	8
27	14 50 11.38	0.660	13 42 47.3	2.59	10 26.2	27	14 44 1.40	0.298	13 21 12.7	0.74	8
28	14 49 55.64	0.652	13 41 45.7	2.55	10 22.0	28	14 43 54.42	0.283	13 20 55.9	0.66	8
29	14 49 40.08	0.644	13 40 45.1	2.50	10 17.8	29	14 43 47.80	0.268	13 20 40.8	0.59	8
30	14 49 24.72	0.635	13 39 45.5	2.46	10 13.6	30	14 43 41.54	0.253	13 20 27.4	0.52	8
31	14 49 9.56	−0.626	−13 38 47.0	+2.41	10 9.5	31	14 43 35.64	−0.238	−13 20 15.8	+0.45	8
32	14 48 54.61	−0.617	−13 37 49.7	+2.36	10 5.3	32	14 43 30.09	−0.223	−13 20 6.0	+0.38	7

Day of the Month.	2d.	10th.	18th.	26th.	Day of the Month.	3d.	11th.	19th.
	″	″	″	″		″	″	″
Semidiameter	8.8	8.8	8.8	8.7	Semidiameter	8.7	8.6	8.5
Horizontal Parallax . .	1.0	1.0	1.0	1.0	Horizontal Parallax . .	1.0	1.0	1.0

Note.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 43 35.64	−0.238	−13 20 15.8	+0.45	8 2.1
2	14 43 30.09	0.223	13 20 6.0	0.38	7 58.1
3	14 43 24.91	0.208	13 19 58.0	0.30	7 54.1
4	14 43 20.10	0.193	13 19 51.7	0.23	7 50.1
5	14 43 15.65	0.178	13 19 47.2	0.15	7 46.1
6	14 43 11.57	−0.163	−13 19 44.5	+0.08	7 42.1
7	14 43 7.87	0.147	13 19 43.6	0.00	7 38.1
8	14 43 4.54	0.131	13 19 44.5	−0.07	7 34.1
9	14 43 1.59	0.115	13 19 47.2	0.14	7 30.1
10	14 42 59.02	0.099	13 19 51.8	0.22	7 26.1
11	14 42 56.83	−0.083	13 19 58.2	−0.29	7 22.2
12	14 42 55.02	0.067	13 20 6.4	0.37	7 18.2
13	14 42 53.59	0.051	13 20 16.3	0.45	7 14.3
14	14 42 52.55	0.035	13 20 28.1	0.52	7 10.3
15	14 42 51.89	0.019	13 20 41.7	0.60	7 6.4
16	14 42 51.61	−0.003	13 20 57.1	−0.68	7 2.4
17	14 42 51.72	+0.013	13 21 14.3	0.77	6 58.5
18	14 42 52.22	0.029	13 21 33.3	0.83	6 54.6
19	14 42 53.10	0.045	13 21 54.1	0.90	6 50.7
20	14 42 54.36	0.061	13 22 16.7	0.98	6 46.8
21	14 42 55.99	+0.077	13 22 41.0	−1.05	6 42.9
22	14 42 58.01	0.093	13 23 7.1	1.13	6 39.0
23	14 43 0.41	0.108	13 23 34.9	1.20	6 35.1
24	14 43 3.20	0.124	13 24 4.5	1.28	6 31.2
25	14 43 6.37	0.140	13 24 35.9	1.35	6 27.3
26	14 43 9.91	+0.156	−13 25 9.0	−1.42	6 23.4
27	14 43 13.83	0.172	13 25 43.8	1.49	6 19.6
28	14 43 18.13	0.187	13 26 20.3	1.56	6 15.7
29	14 43 22.80	0.203	13 26 58.5	1.63	6 11.9
30	14 43 27.85	0.219	13 27 38.4	1.70	6 8.0
31	14 43 33.27	+0.235	−13 28 20.0	−1.77	6 4.2
32	14 43 39.07	+0.250	−13 29 3.3	−1.84	6 0.3

Day of the Month.	5th.	13th.	21st	29th.
	″	″	″	″
Semidiameter	8.3	8.2	8.1	8.0
Horizontal Parallax . .	0.9	0.9	0.9	0.9

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 43 39.07	+0.250	−13 29 3.3	−1.84	6 0.3
2	14 43 45.25	0.265	13 29 48.2	1.91	5 56.5
3	14 43 51.80	0.281	13 30 34.9	1.98	5 52.6
4	14 43 58.72	0.296	13 31 23.2	2.05	5 48.8
5	14 44 6.01	0.312	13 32 13.1	2.12	5 45.0
6	14 44 13.68	+0.327	−13 33 4.5	−2.19	5 41.2
7	14 44 21.72	0.342	13 33 57.7	2.25	5 37.4
8	14 44 30.12	0.358	13 34 52.5	2.32	5 33.6
9	14 44 38.88	0.373	13 35 48.8	2.38	5 29.8
10	14 44 48.00	0.388	13 36 46.7	2.45	5 26.1
11	14 44 57.49	+0.403	−13 37 46.2	−2.51	5 22.3
12	14 45 7.34	0.418	13 38 47.2	2.57	5 18.5
13	14 45 17.55	0.433	13 39 49.7	2.64	5 14.7
14	14 45 28.11	0.448	13 40 53.7	2.70	5 11.0
15	14 45 39.02	0.463	13 41 59.2	2.76	5 7.2
16	14 45 50.28	+0.477	−13 43 6.1	−2.82	5 3.5
17	14 46 1.88	0.491	13 44 14.5	2.88	4 59.8
18	14 46 13.83	0.505	13 45 24.3	2.94	4 56.1
19	14 46 26.12	0.519	13 46 35.5	2.99	4 52.3
20	14 46 38.74	0.533	13 47 48.0	3.05	4 48.6
21	14 46 51.70	+0.547	−13 49 1.9	−3.11	4 44.9
22	14 47 5.00	0.561	13 50 17.2	3.16	4 41.2
23	14 47 18.63	0.575	13 51 33.8	3.22	4 37.5
24	14 47 32.58	0.589	13 52 51.7	3.27	4 33.8
25	14 47 46.85	0.602	13 54 10.9	3.33	4 30.1
26	14 48 1.44	+0.615	−13 55 31.3	−3.38	4 26.4
27	14 48 16.36	0.628	13 56 53.0	3.43	4 22.7
28	14 48 31.59	0.641	13 58 15.9	3.48	4 19.0
29	14 48 47.13	0.654	13 59 40.0	3.53	4 15.3
30	14 49 2.98	0.667	14 1 5.4	3.58	4 11.7
31	14 49 19.15	+0.680	−14 2 31.9	−3.62	4 8.0
32	14 49 35.62	+0.693	−14 3 59.6	−3.67	4 4.4

Day of the Month.	6th.	14th.	22d	30th
	″	″	″	″
Semidiameter	7.9	7.8	7.7	7.6
Horizontal Parallax . .	0.9	0.9	0.9	0.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.							OCTOBER.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″
1	14 49 35.62	+0.693	−14 3 59.6	−3.67	4 4.4	1	14 59 55.68	+1.007	−14 54 57.7	−4.68
2	14 49 52.39	0.706	14 5 28.4	3.72	4 0.7	2	15 0 19.96	1.015	14 56 50.2	4.70
3	14 50 9.47	0.718	14 6 58.3	3.76	3 57.1	3	15 0 44.43	1.023	14 58 43.1	4.72
4	14 50 26.85	0.730	14 8 29.4	3.81	3 53.4	4	15 1 9.09	1.031	15 0 36.5	4.73
5	14 50 44.52	0.742	14 10 1.5	3.86	3 49.8	5	15 1 33.93	1.039	15 2 30.3	4.75
6	14 51 2.48	+0.754	−14 11 34.6	−3.90	3 46.1	6	15 1 58.96	+1.046	−15 4 24.5	−4.76
7	14 51 20.73	0.766	14 13 8.8	3.95	3 42.5	7	15 2 24.16	1.053	15 6 19.0	4.78
8	14 51 39.27	0.778	14 14 44.0	3.99	3 38.9	8	15 2 49.54	1.060	15 8 13.8	4.79
9	14 51 58.09	0.790	14 16 20.2	4.03	3 35.3	9	15 3 15.09	1.067	15 10 9.0	4.81
10	14 52 17.18	0.802	14 17 57.3	4.07	3 31.7	10	15 3 40.81	1.074	15 12 4.5	4.82
11	14 52 36.55	+0.813	−14 19 35.4	−4.11	3 28.1	11	15 4 6.68	+1.081	−15 14 0.2	−4.83
12	14 52 56.19	0.824	14 21 14.4	4.15	3 24.5	12	15 4 32.71	1.088	15 15 56.1	4.84
13	14 53 16.09	0.835	14 22 54.3	4.18	3 20.9	13	15 4 58.90	1.094	15 17 52.1	4.84
14	14 53 36.26	0.846	14 24 35.0	4.22	3 17.3	14	15 5 25.23	1.100	15 19 48.4	4.85
15	14 53 56.69	0.856	14 26 16.5	4.25	3 13.7	15	15 5 51.70	1.106	15 21 44.9	4.85
16	14 54 17.37	+0.867	−14 27 58.9	−4.28	3 10.1	16	15 6 18.31	+1.112	−15 23 41.5	−4.86
17	14 54 38.30	0.877	14 29 42.1	4.32	3 6.5	17	15 6 45.07	1.118	15 25 38.3	4.86
18	14 54 59.48	0.887	14 31 26.0	4.35	3 2.9	18	15 7 11.95	1.123	15 27 35.2	4.87
19	14 55 20.91	0.897	14 33 10.7	4.38	2 59.4	19	15 7 38.95	1.128	15 29 32.1	4.87
20	14 55 42.57	0.907	14 34 56.1	4.41	2 55.8	20	15 8 6.07	1.133	15 31 29.1	4.88
21	14 56 4.47	+0.917	−14 36 42.2	−4.44	2 52.2	21	15 8 33.32	+1.138	−15 33 26.1	−4.88
22	14 56 26.60	0.927	14 38 29.0	4.47	2 48.6	22	15 9 0.68	1.143	15 35 23.2	4.88
23	14 56 48.96	0.937	14 40 16.5	4.50	2 45.1	23	15 9 28.15	1.147	15 37 20.3	4.88
24	14 57 11.55	0.946	14 42 4.6	4.52	2 41.5	24	15 9 55.72	1.151	15 39 17.3	4.88
25	14 57 34.36	0.955	14 43 53.3	4.55	2 38.0	25	15 10 23.40	1.155	15 41 14.3	4.87
26	14 57 57.38	+0.964	−14 45 42.6	−4.57	2 34.4	26	15 10 51.18	+1.159	−15 43 11.2	−4.87
27	14 58 20.62	0.973	14 47 32.5	4.60	2 30.9	27	15 11 19.05	1.163	15 45 8.1	4.87
28	14 58 44.08	0.982	14 49 23.0	4.62	2 27.3	28	15 11 47.01	1.167	15 47 4.9	4.86
29	14 59 7.74	0.991	14 51 14.0	4.64	2 23.8	29	15 12 15.06	1.171	15 49 1.6	4.86
30	14 59 31.61	0.999	14 53 5.6	4.66	2 20.2	30	15 12 43.20	1.174	15 50 58.2	4.85
31	14 59 55.68	+1.007	−14 54 57.7	−4.68	2 16.7	31	15 13 11.41	+1.177	−15 52 54.6	−4.84
32	15 0 19.96	+1.015	−14 56 50.2	−4.70	2 13.1	32	15 13 39.70	+1.180	−15 54 50.8	−4.84

Day of the Month.	7th.	15th.	23d.	Day of the Month.	1st.	9th.	17th.
	″	″	″		″	″	″
Semidiameter	7.5	7.4	7.4	Semidiameter	7.3	7.3	7.2
Horizontal Parallax	0.9	0.8	0.8	Horizontal Parallax . .	0.8	0.8	0.8

Note.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 13 39.70	+1.180	−15 54 50.8	−4.84	0 28.4
2	15 14 8.06	1.183	15 56 46.8	4.83	0 25.0
3	15 14 36.49	1.186	15 58 42.6	4.82	0 21.5
4	15 15 4.97	1.189	16 0 38.2	4.81	0 18.1
5	15 15 33.50	1.191	16 2 33.5	4.80	0 14.6
6	15 16 2.09	+1.193	−16 4 28.5	−4.79	0 11.2
7	15 16 30.73	1.195	16 6 23.2	4.78	0 7.8
8	15 16 59.40	1.196	16 8 17.6	4.76	0 4.3
9	15 17 28.11	1.197	16 10 11.6	4.75	0 0.9 23 57.4
10	15 17 56.85	1.198	16 12 5.3	4.73	23 53.9
11	15 18 25.62	+1.199	−16 13 58.6	−4.72	23 50.5
12	15 18 54.41	1.200	16 15 51.5	4.70	23 47.0
13	15 19 23.21	1.200	16 17 44.0	4.68	23 43.6
14	15 19 52.02	1.201	16 19 36.0	4.66	23 40.1
15	15 20 20.84	1.201	16 21 27.6	4.64	23 36.7
16	15 20 49.66	+1.201	−16 23 18.7	−4.62	23 33.2
17	15 21 18.48	1.200	16 25 9.3	4.60	23 29.8
18	15 21 47.30	1.200	16 26 59.4	4.58	23 26.3
19	15 22 16.11	1.199	16 28 49.0	4.56	23 22.9
20	15 22 44.90	1.199	16 30 38.0	4.53	23 19.4
21	15 23 13.67	+1.198	−16 32 26.5	−4.51	23 16.0
22	15 23 42.42	1.197	16 34 14.5	4.49	23 12.5
23	15 24 11.15	1.196	16 36 1.9	4.46	23 9.1
24	15 24 39.84	1.194	16 37 48.7	4.44	23 5.6
25	15 25 8.49	1.192	16 39 34.8	4.41	23 2.1
26	15 25 37.10	+1.190	−16 41 20.3	−4.39	22 58.6
27	15 26 5.67	1.188	16 43 5.2	4.36	22 55.2
28	15 26 34.19	1.186	16 44 49.4	4.33	22 51.7
29	15 27 2.65	1.184	16 46 32.9	4.30	22 48.3
30	15 27 31.06	1.182	16 48 15.8	4.27	22 44.8
31	15 27 59.41	+1.179	−16 49 57.9	−4.24	22 41.4
32	15 28 27.68	+1.176	−16 51 39.3	−4.21	22 37.9

Day of the Month.	2d.	10th.	18th.	26th.
	″	″	″	″
Semidiameter	7.2	7.2	7.2	7.2
Horizontal Parallax . .	0.8	0.8	0.8	0.8

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 27 59.41	+1.179	−16 49 57.9	−4.24	22 41.4
2	15 28 27.68	1.176	16 51 39.3	4.21	22 37.9
3	15 28 55.87	1.173	16 53 20.0	4.18	22 34.4
4	15 29 23.98	1.170	16 54 59.9	4.15	22 30.9
5	15 29 52.01	1.166	16 56 39.0	4.11	22 27.4
6	15 30 19.94	+1.162	−16 58 17.3	−4.08	22 23.9
7	15 30 47.78	1.158	16 59 54.8	4.05	22 20.5
8	15 31 15.52	1.154	17 1 31.6	4.01	22 17.0
9	15 31 43.15	1.149	17 3 7.5	3.98	22 13.5
10	15 32 10.67	1.144	17 4 42.5	3.94	22 10.0
11	15 32 38.07	+1.139	−17 6 16.7	−3.91	22 6.6
12	15 33 5.35	1.134	17 7 49.9	3.87	22 3.1
13	15 33 32.51	1.129	17 9 22.3	3.83	21 59.6
14	15 33 59.53	1.123	17 10 53.8	3.79	21 56.1
15	15 34 26.41	1.117	17 12 24.4	3.75	21 52.7
16	15 34 53.16	+1.111	−17 13 54.0	−3.72	21 49.2
17	15 35 19.76	1.105	17 15 22.8	3.68	21 45.7
18	15 35 46.21	1.099	17 16 50.6	3.64	21 42.2
19	15 36 12.51	1.093	17 18 17.4	3.60	21 38.7
20	15 36 38.65	1.086	17 19 43.2	3.56	21 35.2
21	15 37 4.63	+1.079	−17 21 8.1	−3.52	21 31.7
22	15 37 30.44	1.072	17 22 32.0	3.48	21 28.2
23	15 37 56.07	1.065	17 23 54.9	3.44	21 24.7
24	15 38 21.53	1.057	17 25 16.8	3.40	21 21.2
25	15 38 46.81	1.049	17 26 37.7	3.35	21 17.7
26	15 39 11.90	+1.041	−17 27 57.6	−3.31	21 14.2
27	15 39 36.80	1.033	17 29 16.4	3.27	21 10.6
28	15 40 1.51	1.025	17 30 34.2	3.22	21 7.1
29	15 40 26.02	1.017	17 31 50.9	3.18	21 3.6
30	15 40 50.32	1.008	17 33 6.5	3.13	21 0.1
31	15 41 14.40	+0.999	−17 34 21.1	−3.09	20 56.5
32	15 41 38.27	+0.990	−17 35 34.6	−3.04	20 53.0

Day of the Month.	4th.	12th.	20th.	28th.	36th.
	″	″	″	″	″
Semidiameter	7.2	7.2	7.3	7.3	7.4
Horizontal Parallax . .	0.8	0.8	0.8	0.8	0.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″
Jan. 3	15 23 22.96	+11.169	−18 17 52.3	−41.13	20 29.7	July 1	15 13 32.92	− 5.426	−17 40 54.6	+19.92
7	15 24 6.41	10.549	18 20 31.9	38.64	20 14.7	5	15 13 12.63	4.713	17 39 40.4	17.14
11	15 24 47.28	9.880	18 23 1.2	35.98	19 59.6	9	15 12 55.26	3.967	17 38 37.7	14.18
15	15 25 25.40	9.172	18 25 19.6	33.22	19 44.5	13	15 12 40.93	3.191	17 37 47.1	11.11
19	15 26 0.61	8.429	18 27 26.8	30.37	19 29.4	17	15 12 29.76	2.393	17 37 8.9	7.98
23	15 26 32.79	+ 7.655	−18 29 22.4	−27.41	19 14.2	21	15 12 21.80	− 1.583	−17 36 43.3	+ 4.80
27	15 27 1.82	6.856	18 31 6.0	24.42	18 58.9	25	15 12 17.11	− 0.761	17 36 30.6	+ 1.54
31	15 27 27.61	6.034	18 32 37.7	21.40	18 43.6	29	15 12 15.72	+ 0.067	17 36 31.0	− 1.75
Feb. 4	15 27 50.06	5.188	18 33 57.1	18.29	18 28.2	Aug. 2	15 12 17.66	0.905	17 36 44.6	5.06
8	15 28 9.09	4.323	18 35 3.9	15.10	18 12.8	6	15 12 22.97	1.750	17 37 11.5	8.39
12	15 28 24.62	+ 3.439	−18 35 57.9	−11.90	17 57.3	10	15 12 31.66	+ 2.595	−17 37 51.7	−11.71
16	15 28 36.59	2.545	18 36 39.1	8.69	17 41.8	14	15 12 43.72	3.431	17 38 45.1	14.97
20	15 28 44.97	1.647	18 37 7.4	5.47	17 26.2	18	15 12 59.10	4.257	17 39 51.4	18.17
24	15 28 49.77	+ 0.752	18 37 22.9	− 2.28	17 10.5	22	15 13 17.76	5.067	17 41 10.4	21.31
28	15 28 50.99	− 0.139	18 37 25.7	+ 0.88	16 54.8	26	15 13 39.62	5.862	17 42 41.7	24.37
Mar. 3	15 28 48.67	− 1.019	−18 37 15.9	+ 4.02	16 39.0	30	15 14 4.64	+ 6.643	−17 44 25.1	−27.33
7	15 28 42.85	1.890	18 36 53.6	7.12	16 23.2	Sept. 3	15 14 32.74	7.406	17 46 20.2	30.22
11	15 28 33.57	2.745	18 36 19.0	10.17	16 7.3	7	15 15 3.86	8.150	17 48 26.7	32.99
15	15 28 20.92	3.577	18 35 32.3	13.14	15 51.4	11	15 15 37.90	8.865	17 50 43.9	35.60
19	15 28 4.99	4.380	18 34 34.0	15.99	15 35.4	15	15 16 14.74	9.549	17 53 11.3	38.08
23	15 27 45.93	− 5.145	−18 33 24.5	+18.72	15 19.3	19	15 16 54.25	+10.201	−17 55 48.3	−40.39
27	15 27 23.89	5.865	18 32 4.4	21.33	15 3.2	23	15 17 36.30	10.818	17 58 34.2	42.55
31	15 26 59.06	6.545	18 30 34.0	23.81	14 47.1	27	15 18 20.75	11.404	18 1 28.5	44.60
Apr. 4	15 26 31.58	7.186	18 28 54.1	26.14	14 30.9	Oct. 1	15 19 7.49	11.959	18 4 30.8	46.47
8	15 26 1.64	7.774	18 27 5.1	28.32	14 14.6	5	15 19 56.38	12.479	18 7 40.0	48.13
12	15 25 29.46	− 8.309	−18 25 7.8	+30.33	13 58.4	9	15 20 47.27	+12.957	−18 10 55.6	−49.64
16	15 24 55.25	8.782	18 23 2.8	32.08	13 42.1	13	15 21 39.98	13.391	18 14 16.9	50.97
20	15 24 19.29	9.188	18 20 51.5	33.59	13 25.7	17	15 22 34.34	13.780	18 17 43.1	52.08
24	15 23 41.83	9.530	18 18 34.4	34.93	13 9.4	21	15 23 30.16	14.123	18 21 13.3	53.01
28	15 23 3.14	9.805	18 16 12.4	36.03	12 53.0	25	15 24 27.27	14.427	18 24 47.0	53.79
May 2	15 22 23.47	−10.018	−18 13 46.5	+36.89	12 36.6	29	15 25 25.52	+14.690	−18 28 23.4	−54.38
6	15 21 43.08	10.165	18 11 17.6	37.52	12 20.2	Nov. 2	15 26 24.73	14.906	18 32 1.8	54.77
10	15 21 2.24	10.242	18 8 46.7	37.88	12 3.8	6	15 27 24.70	15.070	18 35 41.4	55.00
14	15 20 21.24	10.245	18 6 14.9	37.98	11 47.4	10	15 28 25.22	15.182	18 39 21.5	55.01
18	15 19 40.38	10.174	18 3 43.2	37.80	11 31.0	14	15 29 26.09	15.243	18 43 1.2	54.82
22	15 18 59.94	−10.036	−18 1 12.9	+37.33	11 14.6	18	15 30 27.10	+15.255	−18 46 39.8	−54.45
26	15 18 20.18	9.832	17 58 44.9	36.62	10 58.2	22	15 31 28.07	15.222	18 50 16.6	53.94
30	15 17 41.37	9.565	17 56 20.2	35.70	10 41.9	26	15 32 28.81	15.140	18 53 51.1	53.27
June 3	15 17 3.74	9.240	17 53 59.6	34.53	10 25.5	30	15 33 29.12	15.006	18 57 22.5	52.40
7	15 16 27.53	8.854	17 51 44.3	33.08	10 9.2	Dec. 4	15 34 28.79	14.820	19 0 50.1	51.38
11	15 15 52.99	− 8.404	−17 49 35.3	+31.39	9 52.9	8	15 35 27.61	+14.581	−19 4 13.3	−50.17
15	15 15 20.37	7.898	17 47 33.5	29.47	9 36.6	12	15 36 25.37	14.290	19 7 31.3	48.81
19	15 14 49.87	7.342	17 45 39.8	27.35	9 20.4	16	15 37 21.86	13.948	19 10 43.6	47.31
23	15 14 21.69	6.741	17 43 55.0	25.04	9 4.2	20	15 38 16.89	13.558	19 13 49.6	45.68
27	15 13 55.99	6.102	17 42 19.7	22.58	8 48.1	24	15 39 10.27	13.126	19 16 48.9	43.93
July 1	15 13 32.92	− 5.426	−17 40 54.6	+19.92	8 32.0	28	15 40 1.84	+12.648	−19 19 40.9	−42.05
5	15 13 12.63	− 4.713	−17 39 40.4	+17.14	8 15.9	32	15 40 51.39	+12.120	−19 22 25.1	−40.02

Greatest semidiameter,	May 14,	1″.89	Greatest horizontal parallax,	May	14,
Least semidiameter,	November 16,	1″.70	Least horizontal parallax,	November	16,

GREENWICH MEAN TIME.

onth and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
n. 3	4 59 39.78	−6.321	+21 14 29.9	− 7.35	10 7.5	July 1	5 10 57.95	+9.072	+21 35 53.0	+10.14	22 27.3
7	4 59 15.09	6.015	21 14 1.7	6.76	9 51.3	5	5 11 33.86	8.876	21 36 32.5	9.61	22 12.1
11	4 58 51.71	5.668	21 13 35.8	6.11	9 35.2	9	5 12 8.92	8.648	21 37 9.9	9.09	21 57.0
15	4 58 29.79	5.281	21 13 12.8	5.39	9 19.1	13	5 12 43.01	8.389	21 37 45.2	8.51	21 41.8
19	4 58 9.50	4.858	21 12 52.7	4.66	9 3.1	17	5 13 16.00	8.099	21 38 18.1	7.90	21 26.6
23	4 57 50.96	−4.405	+21 12 35.5	− 3.89	8 47.0	21	5 13 47.77	+7.781	+21 38 48.4	+ 7.31	21 11.4
27	4 57 34.29	3.925	21 12 21.6	3.04	8 31.1	25	5 14 18.22	7.438	21 39 16.6	6.74	20 56.2
31	4 57 19.59	3.421	21 12 11.2	2.16	8 15.1	29	5 14 47.25	7.072	21 39 42.3	6.12	20 40.9
eb. 4	4 57 6.94	2.900	21 12 4.3	1.27	7 59.2	Aug. 2	5 15 14.77	6.680	21 40 5.6	5.50	20 25.7
8	4 56 56.41	2.359	21 12 0.8	− 0.36	7 43.3	6	5 15 40.66	6.260	21 40 26.3	4.85	20 10.4
12	4 56 48.09	−1.797	+21 12 1.2	+ 0.54	7 27.4	10	5 16 4.82	+5.814	+21 40 44.4	+ 4.20	19 55.0
16	4 56 42.05	1.222	21 12 5.1	1.46	7 11.6	14	5 16 27.15	5.348	21 40 59.9	3.55	19 39.7
20	4 56 38.32	0.641	21 12 12.9	2.40	6 55.8	18	5 16 47.58	4.863	21 41 12.8	2.91	19 24.3
24	4 56 36.93	−0.054	21 12 24.3	3.30	6 40.0	22	5 17 6.03	4.360	21 41 23.2	2.29	19 8.8
28	4 56 37.89	+0.530	21 12 39.3	4.21	6 24.3	26	5 17 22.44	3.841	21 41 31.1	1.65	18 53.4
ar. 3	4 56 41.18	+1.116	+21 12 58.0	+ 5.11	6 8.6	30	5 17 36.74	+3.308	+21 41 36.4	+ 1.01	18 37.9
7	4 56 46.81	1.697	21 13 20.2	5.97	5 53.0	Sept. 3	5 17 48.89	2.761	21 41 39.2	+ 0.40	18 22.3
11	4 56 54.75	2.276	21 13 45.8	6.82	5 37.4	7	5 17 58.82	2.200	21 41 39.6	− 0.21	18 6.8
15	4 57 5.01	2.848	21 14 14.8	7.64	5 21.9	11	5 18 6.48	1.626	21 41 37.5	0.82	17 51.2
19	4 57 17.52	3.406	21 14 46.9	8.40	5 6.4	15	5 18 11.83	1.053	21 41 33.0	1.42	17 35.5
23	4 57 32.24	+3.949	+21 15 22.0	+ 9.12	4 50.9	19	5 18 14.90	+0.482	+21 41 26.1	− 2.00	17 19.8
27	4 57 49.09	4.473	21 15 59.9	9.80	4 35.4	23	5 18 15.68	−0.095	21 41 17.0	2.56	17 4.1
31	4 58 8.00	4.979	21 16 40.4	10.42	4 20.0	27	5 18 14.14	0.672	21 41 5.6	3.12	16 48.4
pr. 4	4 58 28.90	5.468	21 17 23.3	11.01	4 4.6	Oct. 1	5 18 10.31	1.240	21 40 52.0	3.64	16 32.6
8	4 58 51.72	5.935	21 18 8.5	11.55	3 49.3	5	5 18 4.23	1.804	21 40 36.5	4.14	16 16.8
12	4 59 16.36	+6.382	+21 18 55.7	+12.01	3 34.0	9	5 17 55.89	−2.357	+21 40 18.9	− 4.64	16 0.9
16	4 59 42.75	6.804	21 19 44.6	12.42	3 18.7	13	5 17 45.39	2.895	21 39 59.3	5.12	15 45.0
20	5 0 10.76	7.194	21 20 35.1	12.79	3 3.4	17	5 17 32.77	3.412	21 39 37.9	5.56	15 29.0
24	5 0 40.27	7.557	21 21 26.9	13.07	2 48.2	21	5 17 18.12	3.910	21 39 14.8	5.97	15 13.0
28	5 1 11.19	7.897	21 22 19.7	13.30	2 33.0	25	5 17 1.52	4.382	21 38 50.1	6.36	14 57.0
ay 2	5 1 43.42	+8.209	+21 23 13.3	+13.49	2 17.8	29	5 16 43.09	−4.830	+21 38 23.9	− 6.72	14 41.0
6	5 2 16.83	8.489	21 24 7.6	13.61	2 2.6	Nov. 2	5 16 22.91	5.254	21 37 56.3	7.04	14 24.9
10	5 2 51.30	8.739	21 25 2.3	13.69	1 47.4	6	5 16 1.10	5.645	21 37 27.6	7.31	14 8.8
14	5 3 26.71	8.959	21 25 57.1	13.69	1 32.3	10	5 15 37.80	5.995	21 36 57.8	7.57	13 52.7
18	5 4 2.93	9.144	21 26 51.8	13.64	1 17.2	14	5 15 13.19	6.303	21 36 27.0	7.79	13 36.6
22	5 4 39.82	+9.296	+21 27 46.2	+13.52	1 2.1	18	5 14 47.42	−6.575	+21 35 55.5	− 7.95	13 20.4
26	5 5 17.26	9.418	21 28 40.0	13.37	0 47.0	22	5 14 20.64	6.808	21 35 23.4	8.06	13 4.2
30	5 5 55.13	9.510	21 29 33.2	13.19	0 31.9	26	5 13 53.01	6.997	21 34 51.0	8.12	12 48.1
ne 3	5 6 33.30	9.569	21 30 25.5	12.95	0 16.8	30	5 13 24.73	7.137	21 34 18.4	8.15	12 31.9
7	5 7 11.64	9.596	21 31 16.8	12.67	0 1.7 23 57.9	Dec. 4	5 12 55.95	7.237	21 33 45.8	8.12	12 15.7
11	5 7 50.03	+9.591	+21 32 6.9	+12.34	23 42.8	8	5 12 26.89	−7.285	+21 33 13.4	− 8.04	11 59.4
15	5 8 28.33	9.550	21 32 55.5	11.95	23 27.7	12	5 11 57.73	7.285	21 32 41.5	7.89	11 43.2
19	5 9 6.39	9.476	21 33 42.5	11.54	23 12.6	16	5 11 28.67	7.234	21 32 10.3	7.69	11 27.0
23	5 9 44.10	9.371	21 34 27.8	11.11	22 57.5	20	5 10 59.91	7.139	21 31 40.0	7.42	11 10.8
27	5 10 21.32	9.236	21 35 11.4	10.65	22 42.4	24	5 10 31.61	6.999	21 31 10.9	7.11	10 54.6
ly 1	5 10 57.95	+9.072	+21 35 53.0	+10.14	22 27.3	28	5 10 3.97	−6.815	+21 30 43.1	− 6.79	10 38.5
5	5 11 33.86	+8.876	+21 36 32.5	+ 9.61	22 12.1	32	5 9 37.15	−6.583	+21 30 16.6	− 6.57	10 22.3

Greatest semidiameter,	December	9, = 1″.33	Greatest horizontal parallax,	December	9, = 0″.31
Least semidiameter,	June	10, = 1″.25	Least horizontal parallax,	June	10, = 0″.29

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude. Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan. −1	297 21 50.8	3 8 46.6	+ 8 9.4	−6 35 44.8	− 7 43.5	9.6414813	0.1470929	0.1446651
1	303 46 38.4	3 16 13.0	5 45.1	6 49 0.0	5 28.4	9.6332853	0.1420075	0.1391102
3	310 27 31.8	3 24 53.1	+ 2 56.6	6 57 24.2	− 2 51.9	9.6240253	0.1359623	0.1325515
5	317 27 3.7	3 34 52.6	− 0 9.5	7 0 10.9	+ 0 9.7	9.6137261	0.1288649	0.1248879
7	324 47 58.9	3 46 17.1	3 24.4	6 56 26.0	3 40.3	9.6024369	0.1206048	0.1159989
9	332 33 11.1	3 59 10.0	− 6 35.5	−6 45 8.0	+ 7 43.3	9.5902404	0.1110523	0.1057455
11	340 45 39.0	4 13 32.9	9 26.4	6 25 9.7	12 20.8	9.5772683	0.1000585	0.0939697
13	349 28 20.6	4 29 22.3	11 37.3	5 55 22.4	17 31.9	9.5637179	0.0874576	0.0804987
15	358 43 58.5	4 46 27.1	12 46.5	5 14 43.4	23 11.1	9.5498697	0.0730703	0.0651504
17	8 34 43.0	5 4 25.2	12 32.9	4 22 28.0	29 5.3	9.5361082	0.0567187	0.0477557
19	19 1 48.1	5 22 39.0	−10 42.6	−3 18 27.5	+34 51.5	9.5229310	0.0382459	0.0281800
21	30 4 53.8	5 40 15.4	7 13.5	2 3 30.5	39 55.0	9.5109447	0.0175532	0.0063690
23	41 41 38.2	5 56 4.4	− 2 25.3	−0 39 44.9	43 32.4	9.5008298	9.9946448	9.9824092
25	53 47 4.0	6 8 42.6	+ 2 59.3	+0 49 11.3	44 58.4	9.4932719	9.9697087	9.9566053
27	66 13 26.6	6 16 47.7	7 59.6	2 18 18.5	43 39.6	9.4888579	9.9431856	9.9295577
29	78 50 34.8	6 19 19.9	+11 32.3	+3 41 53.7	+39 27.6	9.4879627	9.9158519	9.9022230
31	91 26 44.8	6 15 49.9	12 52.0	4 54 29.1	32 46.7	9.4906648	9.8888474	9.8759183
Feb. 2	103 50 5.9	6 6 38.1	11 47.2	5 51 53.0	24 26.5	9.4967291	9.8636413	9.8522271
4	115 50 9.2	5 52 45.0	8 40.3	6 31 51.1	15 30.6	9.5056605	9.8418772	9.8327791
6	127 18 55.3	5 35 36.4	+ 4 17.6	6 54 8.6	+ 6 54.2	9.5168082	9.8250914	9.8189356
8	138 11 25.3	5 16 43.3	− 0 29.3	+7 0 6.9	− 0 43.9	9.5294777	9.8143882	9.8114736
10	148 25 31.4	4 57 24.2	4 56.5	6 52 4.9	7 4.0	9.5430194	9.8101722	9.8104163
12	158 1 24.8	4 38 38.8	8 33.8	6 32 43.2	12 4.1	9.5568795	9.8121020	9.8150975
14	167 0 54.7	4 21 5.3	11 6.6	6 4 38.5	15 49.0	9.5706185	9.8192516	9.8244100
16	175 26 48.7	4 5 5.4	12 30.9	5 30 9.4	18 30.6	9.5839063	9.8304123	9.8371073
18	183 22 25.0	3 50 48.0	−12 51.6	+4 51 10.6	−20 20.6	9.5965064	9.8443555	9.8520291
20	190 51 9.5	3 38 13.4	12 17.2	4 9 13.8	21 30.3	9.6082574	9.8600164	9.8682210
22	197 56 24.4	3 27 17.4	10 58.3	3 25 29.6	22 9.2	9.6190543	9.8765607	9.8849660
24	204 41 20.2	3 17 53.3	9 5.6	2 40 51.3	22 25.4	9.6288327	9.8933800	9.9017562
26	211 8 53.8	3 9 53.7	6 49.4	1 55 59.3	22 24.2	9.6375569	9.9100572	9.9182536
28	217 21 46.4	3 3 11.2	− 4 18.3	+1 11 23.1	−22 10.2	9.6452106	9.9263223	9.9342461
Mar. 1	223 22 25.8	2 57 39.4	− 1 40.4	+0 27 25.0	21 46.6	9.6517894	9.9420116	9.9496095
3	229 13 7.1	2 53 12.1	+ 0 57.3	−0 15 38.3	21 15.7	9.6572965	9.9570336	9.9642804
5	234 55 53.9	2 49 44.3	3 29.3	0 57 33.8	20 39.0	9.6617381	9.9713475	9.9782348
7	240 32 41.5	2 47 12.2	5 50.4	1 38 11.1	19 57.6	9.6651224	9.9849435	9.9914754
9	246 5 17.7	2 45 32.6	+ 7 56.7	−2 17 21.2	−19 11.9	9.6674569	9.9978326	0.0040187
11	251 35 25.8	2 44 43.7	9 44.1	2 54 55.8	18 22.0	9.6687472	0.0100369	0.0158908
13	257 4 45.4	2 44 43.9	11 9.8	3 30 46.3	17 27.7	9.6689966	0.0215851	0.0271232
15	262 34 54.1	2 45 33.0	12 10.9	4 4 43.4	16 28.8	9.6682057	0.0325078	0.0377433
17	268 7 30.5	2 47 11.4	12 45.0	4 36 36.6	15 23.6	9.6663727	0.0428339	0.0477824
19	273 44 13.4	2 49 40.2	+12 50.8	−5 6 13.2	−14 11.7	9.6634928	0.0525914	0.0572640
21	279 26 46.1	2 53 1.6	12 26.2	5 33 18.2	12 51.7	9.6595594	0.0618028	0.0662094
23	285 16 56.6	2 57 18.3	11 30.8	5 57 33.3	11 21.5	9.6545645	0.0704853	0.0746314
25	291 16 38.7	3 2 34.0	10 4.3	6 18 36.0	9 39.0	9.6485007	0.0786480	0.0825353
27	297 27 54.9	3 8 53.0	8 7.4	6 35 59.2	7 41.6	9.6413629	0.0862928	0.0899189
29	303 52 56.4	3 16 20.4	+ 5 42.7	−6 49 10.2	− 5 26.2	9.6331512	0.0934117	0.0967682
31	310 34 5.8	3 25 1.7	+ 2 53.9	−6 57 29.5	− 2 49.3	9.6238755	0.0999851	0.1030582

MERCURY.

GREENWICH MEAN NOON.

ate.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
r. 0	310 34 5.8	3 25 1.7	+ 2 53.9	−6 57 29.5	− 2 49.3	9.6238755	0.0999851	0.1030582
2	317 33 56.4	3 35 2.6	− 0 12.6	7 0 10.6	+ 0 12.8	9.6135616	0.1059818	0.1087494
4	324 55 12.6	3 46 28.2	3 27.6	6 56 19.1	3 43.9	9.6022584	0.1113537	0.1137863
6	332 40 48.3	3 59 22.5	6 38.3	6 44 53.5	7 47.4	9.5900500	0.1160374	0.1180956
8	340 53 42.6	4 13 46.8	9 28.7	6 24 46.6	12 25.3	9.5770682	0.1199487	0.1215831
10	349 36 53.1	4 29 37.2	−11 39.2	−5 54 49.7	+17 36.8	9.5635113	0.1229833	0.1241324
12	358 53 1.7	4 46 42.5	12 47.0	5 14 0.2	23 16.4	9.5496623	0.1250128	0.1256044
14	8 44 18.8	5 4 40.7	12 32.3	4 21 34.0	29 10.7	9.5359063	0.1258862	0.1258369
16	19 11 55.5	5 22 54.7	10 40.1	3 17 22.9	34 56.5	9.5227431	0.1254338	0.1246531
18	30 15 32.4	5 40 30.5	7 9.6	2 2 16.8	39 59.1	9.5107806	0.1234721	0.1218686
20	41 52 44.6	5 56 16.8	− 2 20.6	−0 38 24.6	+43 34.8	9.5006999	0.1198213	0.1173107
22	53 58 31.5	6 8 51.3	+ 3 4.4	+0 50 33.9	44 58.4	9.4931865	0.1143202	0.1108372
24	66 25 7.4	6 16 52.9	8 3.7	2 19 38.5	43 36.9	9.4888243	0.1068526	0.1023618
26	79 2 18.7	6 19 18.8	11 34.6	3 43 5.8	39 22.4	9.4879835	0.0973655	0.0918691
28	91 38 20.9	6 15 43.3	12 52.2	4 55 28.6	32 39.2	9.4907391	0.0858830	0.0794222
30	104 1 23.8	6 6 26.8	+11 45.2	+5 52 37.4	+24 18.6	9.4968508	0.0725062	0.0651567
y 2	116 1 0.8	5 52 30.1	8 36.8	6 32 19.2	15 22.4	9.5058202	0.0573984	0.0492583
4	127 29 14.9	5 35 19.9	+ 4 13.3	6 54 21.0	+ 6 46.7	9.5169954	0.0407643	0.0319447
6	138 21 10.2	5 16 26.0	− 0 33.7	7 0 5.5	− 0 50.2	9.5296819	0.0228282	0.0134427
8	148 34 40.9	4 57 6.7	5 0.2	6 51 52.0	7 9.6	9.5432314	0.0038158	9.9939741
10	158 10 0.4	4 38 22.2	− 8 36.6	+6 32 21.3	−12 8.0	9.5570919	9.9839435	9.9737500
12	167 8 58.6	4 20 50.2	11 8.3	6 4 9.8	15 52.0	9.5708253	9.9634174	9.9529702
14	175 34 24.0	4 4 51.9	12 31.6	5 29 35.7	18 32.6	9.5841033	9.9424322	9.9318276
16	183 29 34.7	3 50 36.0	12 51.5	4 50 33.7	20 21.9	9.5966909	9.9211806	9.9105157
18	190 57 56.8	3 38 3.0	12 16.3	4 8 34.7	21 31.2	9.6084274	9.8998582	9.8892354
20	198 2 52.3	3 27 8.4	−10 56.9	+3 24 49.2	−22 9.9	9.6192086	9.8786752	9.8682077
22	204 47 31.6	3 17 45.6	9 3.8	2 40 10.4	22 25.6	9.6289709	9.8578644	9.8476795
24	211 14 50.9	3 9 47.3	6 47.1	1 55 18.3	22 24.1	9.6376785	9.8376892	9.8279322
26	217 27 32.0	3 3 6.0	4 16.1	1 10 42.5	22 9.9	9.6453155	9.8184499	9.8092863
28	223 28 1.6	2 57 35.0	− 1 38.0	+0 26 45.1	21 46.6	9.6518778	9.8004878	9.7921023
30	229 18 35.0	2 53 8.6	+ 0 59.9	−0 16 17.3	−21 15.4	9.6573686	9.7841798	9.7767715
ne 1	235 1 15.8	2 49 41.7	3 31.7	0 58 11.7	20 38.4	9.6617940	9.7699293	9.7637046
3	240 37 59.0	2 47 10.5	5 52.6	1 38 47.8	19 56.9	9.6651624	9.7581467	9.7533028
5	246 10 32.7	2 45 31.8	7 58.5	2 17 56.6	19 11.2	9.6674811	9.7492168	9.7459277
7	251 40 39.6	2 44 43.4	9 45.8	2 55 29.7	18 21.2	9.6687558	9.7434688	9.7418654
9	257 9 59.4	2 44 44.4	+11 11.1	−3 31 18.5	−17 26.8	9.6689897	9.7411354	9.7412893
11	262 40 10.0	2 45 34.4	12 11.7	4 5 13.8	16 27.6	9.6681833	9.7423276	9.7442419
13	268 12 49.7	2 47 13.4	12 45.4	4 37 5.0	15 22.6	9.6663348	9.7470159	9.7506253
15	273 49 37.5	2 49 42.9	12 50.6	5 6 39.5	14 10.6	9.6634390	9.7550380	9.7602158
17	279 32 16.6	2 53 5.2	12 25.5	5 33 42.0	12 50.4	9.6594898	9.7661159	9.7726915
19	285 22 35.2	2 57 22.8	+11 29.5	−5 57 54.3	−11 20.0	9.6544787	9.7798928	9.7876683
21	291 22 27.0	3 2 39.2	10 2.5	6 18 53.8	9 37.3	9.6483988	9.7959662	9.8047346
23	297 33 54.6	3 8 59.3	8 5.3	6 36 13.5	7 39.6	9.6412449	9.8139224	9.8234809
25	303 59 9.8	3 16 27.8	5 40.2	6 49 20.2	5 23.9	9.6330169	9.8333624	9.8435209
27	310 40 34.9	3 25 10.2	+ 2 51.1	6 57 34.7	− 2 46.7	9.6237253	9.8539141	9.8645018
29	317 40 43.6	3 35 12.2	− 0 15.5	−7 0 10.2	+ 0 15.8	9.6133962	9.8752457	9.8861098
31	325 2 20.4	3 46 39.2	− 3 30.5	−6 56 12.2	+ 3 47.4	9.6020786	9.8970583	9.9080615

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
July 1	325 2 20.4	3 46 39.2	− 3 30.5	−6 56 12.2	+ 3 47.4	9.6020786	9.8970583	9.9080615
3	332 48 19.7	3 59 35.0	6 41.2	6 44 39.1	7 51.4	9.5898573	9.9190879	9.9301075
5	341 1 40.3	4 14 0.4	9 31.2	6 24 23.6	12 30.0	9.5768652	9.9410923	9.9520142
7	349 45 19.0	4 29 52.2	11 40.4	5 54 17.2	17 41.8	9.5633017	9.9628457	9.9735596
9	359 1 59.1	4 46 58.7	12 47.5	5 13 17.5	23 21.8	9.5494509	9.9841281	9.9945232
11	8 53 48.8	5 4 57.2	−12 31.4	−4 20 40.3	+29 16.2	9.5357000	0.0047168	0.0146795
13	19 21 58.4	5 23 11.2	10 37.5	3 16 18.7	35 1.5	9.5225506	0.0243821	0.0337946
15	30 26 7.4	5 40 46.3	7 5.7	2 1 3.4	40 3.1	9.5106116	0.0428868	0.0516294
17	42 3 47.9	5 56 29.8	− 2 15.6	−0 37 4.8	43 37.0	9.5005654	0.0599925	0.0679479
19	54 9 57.8	6 9 1.0	+ 3 9.2	+0 51 56.2	44 58.6	9.4930962	0.0754700	0.0825361
21	66 36 48.4	6 16 57.4	+ 8 7.6	+2 20 58.4	+43 34.1	9.4887858	0.0891260	0.0952236
23	79 14 3.5	6 19 17.8	11 36.8	3 44 17.2	39 17.2	9.4880004	0.1008179	0.1059033
25	91 49 59.1	6 15 37.4	12 52.2	4 56 28.3	32 32.4	9.4908098	0.1104782	0.1145466
27	104 12 45.2	6 6 16.0	11 43.1	5 53 21.9	24 10.4	9.4969692	0.1181176	0.1212036
29	116 11 56.6	5 52 15.8	8 33.3	6 32 47.2	15 14.3	9.5059777	0.1238204	0.1259878
31	127 39 39.6	5 35 2.9	+ 4 9.0	+6 54 33.4	+ 6 39.2	9.5171812	0.1277261	0.1290576
Aug. 2	138 31 0.3	5 16 8.0	− 0 37.9	7 0 3.8	− 0 56.7	9.5298854	0.1300054	0.1305922
4	148 43 56.1	4 56 49.4	5 3.9	6 51 38.8	7 14.8	9.5434434	0.1308406	0.1307721
6	158 18 41.6	4 38 5.7	8 39.4	6 31 58.9	12 11.9	9.5573049	0.1304076	0.1297666
8	167 17 7.8	4 20 34.9	11 10.1	6 3 40.7	15 54.9	9.5710335	0.1288671	0.1277255
10	175 42 4.2	4 4 38.2	−12 32.3	+5 29 1.6	−18 34.6	9.5843024	0.1263575	0.1247765
12	183 36 49.2	3 50 24.0	12 51.3	4 49 56.2	20 23.3	9.5968779	0.1229948	0.1210235
14	191 4 48.6	3 37 52.4	12 15.4	4 7 55.0	21 32.0	9.6086005	0.1188726	0.1165504
16	198 9 24.4	3 26 59.2	10 55.4	3 24 8.3	22 10.4	9.6193663	0.1140644	0.1114210
18	204 53 46.6	3 17 37.8	9 1.8	2 39 29.0	22 25.8	9.6291127	0.1086254	0.1056823
20	211 20 51.6	3 9 40.6	− 6 44.9	+1 54 36.9	−22 24.0	9.6378042	0.1025953	0.0993673
22	217 33 20.4	3 3 0.4	4 13.5	1 10 1.5	22 9.6	9.6454250	0.0960005	0.0924959
24	223 33 40.1	2 57 30.5	− 1 35.6	+0 26 4.9	21 45.7	9.6519712	0.0888546	0.0850763
26	229 24 5.4	2 53 5.0	+ 1 2.1	−0 16 56.6	21 14.6	9.6574457	0.0811610	0.0771076
28	235 6 39.9	2 49 39.0	3 33.8	0 58 49.9	20 37.8	9.6618550	0.0729145	0.0685798
30	240 43 18.4	2 47 8.4	+ 5 54.6	−1 39 24.7	−19 56.3	9.6652074	0.0641013	0.0594760
Sept. 1	246 15 48.6	2 45 30.5	8 0.5	2 18 32.1	19 10.4	9.6675101	0.0547007	0.0497719
3	251 45 54.1	2 44 43.2	9 47.2	2 56 3.6	18 20.4	9.6687689	0.0446860	0.0394391
5	257 15 13.9	2 44 44.8	11 12.0	3 31 50.7	17 26.0	9.6689870	0.0340262	0.0284439
7	262 45 25.9	2 45 35.4	12 12.4	4 5 44.2	16 26.6	9.6681646	0.0226869	0.0167509
9	268 18 8.3	2 47 15.2	+12 45.9	−4 37 33.4	−15 21.5	9.6662999	0.0106318	0.0043254
11	273 55 0.7	2 49 45.7	12 50.5	5 7 5.6	14 9.4	9.6633879	9.9978277	9.9911355
13	279 37 46.2	2 53 8.6	12 24.9	5 34 5.6	12 49.1	9.6594223	9.9842458	9.9771571
15	285 28 12.5	2 57 27.1	11 28.4	5 58 15.1	11 18.6	9.6543947	9.9698689	9.9623823
17	291 28 14.2	3 2 44.6	10 0.9	6 19 11.5	9 35.6	9.6482981	9.9547003	9.9468289
19	297 39 53.6	3 9 5.7	+ 8 3.3	−6 36 27.6	7 37.6	9.6411272	9.9387769	9.9305570
21	304 5 22.7	3 16 35.2	5 37.8	6 49 30.2	5 21.6	9.6328824	9.9221866	9.9136887
23	310 47 3.9	3 25 18.8	+ 2 48.4	6 57 39.8	− 2 44.1	9.6235741	9.9050944	9.8964425
25	317 47 31.4	3 35 22.2	− 0 18.4	7 0 9.7	+ 0 18.8	9.6132288	9.8877811	9.8791706
27	325 9 30.0	3 46 50.6	3 33.5	6 56 5.2	3 50.9	9.6018960	9.8706844	9.8624102
29	332 55 53.3	3 59 47.8	− 6 43.9	−6 44 24.5	+ 7 55.4	9.5896612	9.8544523	9.8469321
31	341 9 41.0	4 14 14.7	− 9 33.6	−6 24 0.4	+12 34.5	9.5766582	9.8399827	9.8337592

MERCURY.

GREENWICH MEAN NOON.

ate.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
t. 1	341 9 41.0	4 14 14.7	− 9 33.6	−6 24 0.4	+12 34.5	9.5766582	9.8399827	9.8337592
3	349 53 49.5	4 30 7.6	11 42.0	5 53 44.4	17 46.9	9.5630873	9.8284231	9.8241438
5	359 11 1.5	4 47 15.2	12 47.9	5 12 34.0	23 27.2	9.5492344	9.8210896	9.8194173
7	9 3 25.0	5 5 14.4	12 30.3	4 19 46.0	29 22.0	9.5354884	9.8192631	9.8207288
9	19 32 9.2	5 23 28.2	10 35.0	3 15 13.6	35 6.7	9.5223523	9.8238740	9.8287076
11	30 36 51.2	5 41 1.8	− 7 1.7	−1 59 48.9	+40 7.2	9.5104371	9.8351845	9.8432075
13	42 15 1.8	5 56 43.5	− 2 10.7	−0 35 43.6	43 39.5	9.5004253	9.8526326	9.8632790
15	54 21 35.5	6 9 11.0	+ 3 14.2	+0 53 20.0	44 58.4	9.4930008	9.8749407	9.8873995
17	66 48 41.4	6 17 2.7	8 11.6	2 22 19.6	43 31.6	9.4887427	9.9004364	9.9138409
19	79 26 1.1	6 19 17.7	11 39.5	3 45 31.0	39 12.0	9.4880132	9.9274192	9.9409998
21	92 1 50.7	6 15 31.6	+12 52.2	+4 57 28.9	+32 25.0	9.4908773	9.9544360	9.9676043
23	104 24 19.8	6 6 5.0	11 40.9	5 54 6.9	24 2.2	9.4970857	9.9804097	9.9927759
25	116 23 5.1	5 52 1.0	8 29.7	6 33 15.6	15 6.0	9.5061336	0.0046498	0.0159949
27	127 50 16.0	5 34 45.8	+ 4 4.6	6 54 45.7	+ 6 31.6	9.5173659	0.0267898	0.0370279
29	138 41 1.3	5 15 50.1	− 0 42.3	7 0 2.0	− 1 3.2	9.5300888	0.0467072	0.0558367
31	148 53 21.2	4 56 31.5	− 5 7.7	+6 51 25.2	− 7 20.0	9.5436559	0.0644301	0.0725048
ov. 2	158 27 31.1	4 37 48.4	8 42.2	6 31 36.1	12 16.0	9.5575188	0.0800812	0.0871804
4	167 25 24.5	4 20 19.2	11 11.9	6 3 10.8	15 57.8	9.5712430	0.0938246	0.1000369
6	175 49 50.8	4 4 24.0	12 33.1	5 28 26.9	18 36.6	9.5845031	0.1058389	0.1112519
8	183 44 9.1	3 50 11.5	12 51.2	4 49 18.1	20 24.4	9.5970668	0.1162965	0.1209923
10	191 11 45.1	3 37 41.4	−12 14.6	+4 7 14.9	−21 32.8	9.6087757	0.1253572	0.1294086
12	198 16 0.1	3 26 49.6	10 53.9	3 23 27.0	22 10.7	9.6195264	0.1331622	0.1366327
14	205 0 4.7	3 17 29.6	8 59.9	2 38 47.3	22 25.8	9.6292569	0.1398339	0.1427783
16	211 26 54.7	3 9 33.8	6 42.6	1 53 55.3	22 23.8	9.6379321	0.1454773	0.1479415
18	217 39 11.0	3 2 54.8	4 11.0	1 9 20.3	22 9.3	9.6455363	0.1501798	0.2522005
20	223 39 20.5	2 57 26.0	− 1 33.1	+0 25 24.3	−21 45.3	9.6520657	0.1540122	0.1556224
22	229 29 37.6	2 53 1.4	+ 1 4.5	−0 17 36.1	21 14.1	9.6575234	0.1570344	0.1582561
24	235 12 5.7	2 49 36.2	3 36.2	0 59 28.3	20 37.2	9.6619163	0.1592916	0.1601448
26	240 48 39.5	2 47 6.6	5 56.7	1 40 1.8	19 55.6	9.6652522	0.1608188	0.1613168
28	246 21 7.0	2 45 29.5	8 2.2	2 19 7.8	19 9.7	9.6675385	0.1616408	0.1617924
30	251 51 11.1	2 44 42.8	+ 9 48.7	−2 56 37.8	−18 19.6	9.6687809	0.1617733	0.1615828
c. 2	257 20 31.0	2 44 45.2	11 13.2	3 32 23.2	17 25.1	9.6689826	0.1612218	0.1606902
4	262 50 44.7	2 45 36.6	12 13.0	4 6 14.8	16 25.7	9.6681440	0.1599864	0.1591091
6	268 23 30.2	2 47 17.2	12 46.0	4 38 2.0	15 20.5	9.6662630	0.1580561	0.1568250
8	274 0 27.3	2 49 48.3	12 50.3	5 7 32.0	14 8.3	9.6633345	0.1554125	0.1538152
10	279 43 18.7	2 53 12.1	+12 24.3	−5 34 29.5	−12 47.8	9.6593524	0.1520287	0.1500478
12	285 33 52.9	2 57 31.5	11 27.5	5 58 36.2	11 17.0	9.6543081	0.1478669	0.1454800
14	291 34 4.4	3 2 50.2	9 59.6	6 19 29.4	9 33.9	9.6481947	0.1428800	0.1400588
16	297 45 56.0	3 9 12.3	8 1.3	6 36 41.8	7 35.7	9.6410070	0.1370083	0.1337186
18	304 11 39.3	3 16 42 9	5 35.3	6 49 40.1	5 19.4	9.6327456	0.1301795	0.1263793
20	310 53 37.0	3 25 27.8	+ 2 45.6	−6 57 44.9	− 2 41.5	9.6234210	0.1223061	0.1179463
22	317 54 23.4	3 35 32.3	− 0 21.5	7 0 9.1	+ 0 21.8	9.6130598	0.1132850	0.1083071
24	325 16 43.0	3 47 2.0	3 36.5	6 55 58.0	3 54.4	9.6017123	0.1029959	0.0973333
26	333 3 30.7	4 0 0.7	6 46.8	6 44 9.7	7 59.5	9.5894644	0.0913007	0.0848784
28	341 17 45.5	4 14 28.9	9 36.0	6 23 36.9	12 39.0	9.5764508	0.0780464	0.0707838
30	350 2 23.8	4 30 23.1	−11 43.7	−5 53 11.1	+17 52.0	9.5628732	0.0630698	0.0548842
32	359 20 7.7	4 47 31.6	−12 48.3	−5 11 50.2	+23 32.6	9.5490191	0.0462082	0.0370251

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan. −1	160 46 40.0	1 37 26.0	+0 31.2	+3 22 50.9	+0 29.9	9.8567815	9.9582533	9.9651335
+3	167 16 15.0	1 37 21.2	−0 9.6	3 23 32.3	−0 9.2	9.8569663	9.9718753	9.9784815
7	173 45 27.9	1 37 15.0	0 49.9	3 21 37.7	0 48.0	9.8571808	9.9849537	9.9912952
11	180 14 13.7	1 37 7.7	1 27.6	3 17 8.8	1 26.2	9.8574224	9.9975082	0.0035959
15	186 42 27.8	1 36 59.2	2 0.8	3 10 9.8	2 3.0	9.8576878	0.0095618	0.0154089
19	193 10 6.2	1 36 49.8	−2 27.9	+3 0 46.6	−2 38.2	9.8579735	0.0211412	0.0267620
23	199 37 5.6	1 36 39.8	2 47.4	2 49 6.9	3 11.2	9.8582760	0.0322754	0.0376844
27	206 3 23.6	1 36 29.2	2 58.5	2 35 20.3	3 41.6	9.8585913	0.0429916	0.0481994
31	212 28 58.6	1 36 18.3	3 0.7	2 19 37.9	4 9.1	9.8589154	0.0533097	0.0583245
Feb. 4	218 53 49.7	1 36 7.3	2 53.8	2 2 11.9	4 33.3	9.8592441	0.0632448	0.0680721
8	225 17 57.1	1 35 56.5	−2 38.2	+1 43 16.0	−4 54.0	9.8595737	0.0728076	0.0774524
12	231 41 21.9	1 35 46.0	2 14.8	1 23 4.9	5 10.9	9.8598997	0.0820087	0.0864785
16	238 4 5.9	1 35 36.1	1 44.8	1 1 53.8	5 24.0	9.8602179	0.0908638	0.0951671
20	244 26 11.7	1 35 26.9	1 9.7	0 39 58.6	5 33.0	9.8605248	0.0993908	0.1035370
24	250 47 42.5	1 35 18.6	−0 31.2	+0 17 35.7	5 37.8	9.8608165	0.1076079	0.1116051
28	257 8 42.0	1 35 11.3	+0 8.8	−0 4 58.4	−5 38.6	9.8610896	0.1155300	0.1193834
Mar. 3	263 29 14.4	1 35 5.1	0 48.3	0 27 27.3	5 35.2	9.8613405	0.1231662	0.1268786
7	269 49 24.0	1 34 59.9	1 25.4	0 49 34.5	5 27.8	9.8615663	0.1305215	0.1340949
11	276 9 15.4	1 34 56.0	1 58.4	1 11 4.2	5 16.4	9.8617643	0.1375995	0.1410361
15	282 28 53.4	1 34 53.2	2 25.5	1 31 40.8	5 1.3	9.8619323	0.1444059	0.1477100
19	288 48 22.7	1 34 51.5	+2 45.5	−1 51 9.6	−4 42.6	9.8620683	0.1509497	0.1541265
23	295 7 47.4	1 34 50.9	2 57.5	2 9 16.7	4 20.5	9.8621706	0.1572418	0.1602967
27	301 27 11.7	1 34 51.4	3 0.9	2 25 49.2	3 55.2	9.8622381	0.1632918	0.1662279
31	307 46 39.7	1 34 52.8	2 55.5	2 40 35.0	3 27.2	9.8622700	0.1691054	0.1719242
Apr. 4	314 6 14.8	1 34 54.9	2 41.6	2 53 23.6	2 56.7	9.8622658	0.1746842	0.1773850
8	320 26 0.0	1 34 57.8	+2 19.9	−3 4 5.8	−2 24.0	9.8622256	0.1800263	0.1826081
12	326 45 58.1	1 35 1.4	1 51.3	3 12 33.7	1 49.6	9.8621498	0.1851306	0.1875942
16	333 6 11.5	1 35 5.4	1 17.3	3 18 40.9	1 13.8	9.8620395	0.1899994	0.1923469
20	339 26 42.0	1 35 9.9	+0 39.5	3 22 22.9	−0 37.0	9.8618957	0.1946372	0.1968713
24	345 47 31.1	1 35 14.7	−0 0.3	3 23 36.6	+0 0.3	9.8617204	0.1990500	0.2011730
28	352 8 40.2	1 35 19.8	−0 40.1	−3 22 20.7	+0 37.6	9.8615155	0.2032409	0.2052532
May 2	358 30 10.4	1 35 25.3	1 17.9	3 18 35.8	1 14.7	9.8612835	0.2072098	0.2091105
6	4 52 2.6	1 35 30.9	1 51.9	3 12 24.2	1 51.0	9.8610272	0.2109537	0.2127394
10	11 14 17.5	1 35 36.6	2 20.5	3 3 49.9	2 26.0	9.8607496	0.2144672	0.2161369
14	17 36 55.7	1 35 42.5	2 42.2	2 52 58.6	2 59.3	9.8604542	0.2177483	0.2193014
18	23 59 58.0	1 35 48.6	−2 55.9	−2 39 58.1	+3 30.6	9.8601444	0.2207971	0.2222351
22	30 23 25.0	1 35 54.9	3 1.0	2 24 57.4	3 59.4	9.8598242	0.2236165	0.2249415
26	36 47 17.3	1 36 1.4	2 57.0	2 8 7.1	4 25.3	9.8594973	0.2262099	0.2274220
30	43 11 35.6	1 36 8.0	2 44.2	1 49 39.5	4 48.0	9.8591678	0.2285782	0.2296766
June 3	49 36 20.8	1 36 14.7	2 23.2	1 29 48.0	5 7.2	9.8588399	0.2307175	0.2317000
7	56 1 33.4	1 36 21.6	−1 55.0	−1 8 47.2	+5 22.6	9.8585178	0.2326235	0.2334871
11	62 27 14.1	1 36 28.7	1 21.0	0 46 52.7	5 34.0	9.8582054	0.2342910	0.2350349
15	68 53 23.2	1 36 35.9	0 42.9	0 24 20.9	5 41.2	9.8579068	0.2357191	0.2363436
19	75 20 1.2	1 36 43.1	−0 2.6	−0 1 28.8	5 44.1	9.8576257	0.2369093	0.2374164
23	81 47 8.1	1 36 50.3	+0 37.9	+0 21 26.0	5 42.6	9.8573657	0.2378656	0.2382570
27	88 14 43.5	1 36 57.3	+1 16.5	+0 44 6.1	+5 36.9	9.8571307	0.2385907	0.2388664
31	94 42 46.4	1 37 4.1	+1 51.3	+1 6 13.9	+5 26.5	9.8569232	0.2390838	0.2392427

VENUS.

GREENWICH MEAN NOON.

ate.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
y 1	94 42 46.4	1 37 4.1	+1 51.3	+1 6 13.9	+5 26.5	9.8569232	0.2390838	0.2392427
5	101 11 15.6	1 37 10.4	2 20.4	1 27 32.3	5 12.0	9.8567461	0.2393422	0.2393822
9	107 40 9.2	1 37 16.3	2 42.4	1 47 44.5	4 53.4	9.8566019	0.2393620	0.2392817
13	114 9 24.8	1 37 21.4	2 56.2	2 6 34.8	4 31.0	9.8564924	0.2391412	0.2389410
17	120 38 59.3	1 37 25.7	3 1.0	2 23 48.2	4 5.1	9.8564190	0.2386810	0.2383627
21	127 8 49.0	1 37 29.0	+2 56.4	+2 39 11.3	+3 36.0	9.8563828	0.2379863	0.2375524
25	133 38 49.6	1 37 31.1	2 42.9	2 52 31.9	3 3.9	9.8563840	0.2370615	0.2365142
29	140 8 56.4	1 37 32.1	2 21.0	3 3 39.5	2 29.5	9.8564229	0.2359106	0.2352502
g. 2	146 39 4.4	1 37 31.6	1 51.8	3 12 25.4	1 53.2	9.8564987	0.2345327	0.2337581
6	153 9 7.9	1 37 29.8	1 16.9	3 18 43.0	1 15.4	9.8566106	0.2329257	0.2320357
10	159 39 1.3	1 37 26.6	+0 38.1	+3 22 27.5	+0 36.7	9.8567571	0.2310876	0.2300815
14	166 8 39.1	1 37 22.0	-0 2.4	3 23 36.3	-0 2.4	9.8569363	0.2290186	0.2278992
18	172 37 55.9	1 37 16.1	0 43.0	3 22 8.8	0 41.3	9.8571457	0.2267237	0.2254934
22	179 6 46.5	1 37 9.0	1 21.3	3 18 6.7	1 19.6	9.8573827	0.2242088	0.2228702
26	185 35 6.1	1 37 0.6	1 55.4	3 11 33.5	1 56.8	9.8576440	0.2214782	0.2200333
30	192 2 50.6	1 36 51.4	-2 23.6	+3 2 34.9	-2 32.2	9.8579264	0.2185350	0.2169831
pt. 3	198 29 56.7	1 36 41.5	2 44.6	2 51 18.5	3 5.6	9.8582261	0.2153772	0.2137168
7	204 56 21.8	1 36 31.0	2 57.2	2 37 53.3	3 36.5	9.8585394	0.2120019	0.2102319
11	211 22 4.0	1 36 20.1	3 0.9	2 22 30.2	4 4.5	9.8588623	0.2084076	0.2065289
15	217 47 2.4	1 36 9.1	2 55.6	2 5 21.4	4 29.3	9.8591906	0.2045960	0.2026098
19	224 11 17.1	1 35 58.3	-2 41.5	+1 46 40.3	-4 50.6	9.8595202	0.2005710	0.1984804
23	230 34 49.0	1 35 47.7	2 19.5	1 26 41.2	5 8.2	9.8598468	0.1963381	0.1941444
27	236 57 39.6	1 35 37.7	1 50.5	1 5 39.4	5 22.0	9.8601666	0.1918991	0.1896019
t. 1	243 19 51.5	1 35 28.4	1 16.1	0 43 50.8	5 31.6	9.8604756	0.1872521	0.1848490
5	249 41 27.8	1 35 19.9	-0 38.1	+0 21 31.6	5 37.2	9.8607699	0.1823920	0.1798803
9	256 2 32.1	1 35 12.4	+0 1.8	-0 1 1.7	-5 38.7	9.8610462	0.1773136	0.1746913
13	262 23 8.5	1 35 6.0	0 41.5	0 23 32.6	5 36.0	9.8613008	0.1720129	0.1692793
17	268 43 21.5	1 35 0.7	1 19.2	0 45 44.8	5 29.4	9.8615310	0.1664906	0.1636462
21	275 3 15.5	1 34 56.6	1 53.0	1 7 22.1	5 18.7	9.8617338	0.1607470	0.1577928
25	281 22 55.4	1 34 53.7	2 21.2	1 28 9.1	5 4.2	9.8619069	0.1547835	0.1517180
29	287 42 25.6	1 34 51.8	+2 42.6	-1 47 50.8	-4 46.0	9.8620482	0.1485959	0.1454156
v. 2	294 1 50.6	1 34 51.0	2 56.0	2 6 13.1	4 24.6	9.8621561	0.1421761	0.1388761
6	300 21 14.6	1 34 51.2	3 1.0	2 23 2.9	3 59.8	9.8622293	0.1355137	0.1320880
10	306 40 41.7	1 34 52.4	2 57.0	2 38 8.2	3 32.3	9.8622668	0.1285980	0.1250427
14	313 0 15.4	1 34 54.5	2 44.4	2 51 18.1	3 2.2	9.8622683	0.1214218	0.1177348
18	319 19 58.7	1 34 57.2	+2 24.0	-3 2 23.1	-2 29.9	9.8622340	0.1139812	0.1101606
22	325 39 54.4	1 35 0.7	1 56.7	3 11 14.8	1 55.7	9.8621640	0.1062722	0.1023151
26	332 0 5.0	1 35 4.7	1 23.6	3 17 47.0	1 20.2	9.8620590	0.0982881	0.0941890
30	338 20 32.5	1 35 9.2	0 46.3	3 21 54.7	0 43.5	9.8619205	0.0900162	0.0857677
c. 4	344 41 18.6	1 35 14.0	+0 6.8	3 23 34.4	-0 6.3	9.8617500	0.0814405	0.0770325
8	351 2 24.6	1 35 19.1	-0 33.1	-3 22 44.7	+0 31.2	9.8615497	0.0725414	0.0679655
12	357 23 51.4	1 35 24.4	1 11.4	3 19 25.7	1 8.2	9.8613219	0.0633025	0.0585510
16	3 45 40.1	1 35 30.0	1 46.3	3 13 39.5	1 44.7	9.8610693	0.0537100	0.0487779
20	10 7 51.5	1 35 35.7	2 16.0	3 5 29.7	2 19.9	9.8607948	0.0437532	0.0386345
24	16 30 26.1	1 35 41.6	2 39.0	2 55 2.0	2 53.6	9.8605020	0.0334197	0.0281060
28	22 53 24.6	1 35 47.7	-2 54.2	-2 42 23.4	+3 25.3	9.8601942	0.0226907	0.0171703
32	29 16 47.8	1 35 54.0	-3 0.8	-2 27 42.9	+3 54.5	9.8598753	0.0115411	0.0057991

MARS.

GREENWICH MEAN NOON.

Date.		Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
								At Date.	At Intermediate Date.
		° ′ ″	′ ″	″	° ′ ″	″			
Jan.	3	238 55 55.6	31 18.46	+18.7	−0 19 38.3	−59.71	0.1827766	0.3682475	0.3663411
	7	241 1 35.5	31 31.48	22.4	0 23 37.2	59.69	0.1812867	0.3644060	0.3624421
	11	243 8 7.7	31 44.63	25.9	0 27 35.8	59.58	0.1797887	0.3604493	0.3584280
	15	245 15 32.6	31 57.89	29.4	0 31 33.8	59.38	0.1782845	0.3563784	0.3543017
	19	247 23 51.0	32 11.29	32.7	0 35 30.8	59.10	0.1767763	0.3521983	0.3500688
	23	249 33 3.1	32 24.80	+35.8	−0 39 26.6	−58.71	0.1752660	0.3479145	0.3457365
	27	251 43 9.6	32 38.45	38.8	0 43 20.5	58.23	0.1737558	0.3435354	0.3413119
	31	253 54 10.8	32 52.16	41.5	0 47 12.4	57.64	0.1722481	0.3390661	0.3367985
Feb.	4	256 6 7.0	33 5.93	44.0	0 51 1.6	56.94	0.1707449	0.3345091	0.3321979
	8	258 18 58.3	33 19.72	46.3	0 54 47.9	56.15	0.1692490	0.3298651	0.3275105
	12	260 32 44.8	33 33.50	+48.2	−0 58 30.9	−55.26	0.1677625	0.3251347	0.3227385
	16	262 47 26.3	33 47.29	50.0	1 2 10.0	54.23	0.1662880	0.3203226	0.3178878
	20	265 3 3.0	34 1.02	51.4	1 5 44.7	53.09	0.1648281	0.3154354	0.3129663
	24	267 19 34.5	34 14.72	52.6	1 9 14.7	51.85	0.1633854	0.3104811	0.3079808
	28	269 37 0.7	34 28.35	53.4	1 12 39.5	50.49	0.1619626	0.3054660	0.3029370
Mar.	3	271 55 21.2	34 41.86	+53.8	−1 15 58.6	−49.01	0.1605622	0.3003934	0.2978357
	7	274 14 35.4	34 55.17	53.9	1 19 11.6	47.40	0.1591870	0.2952638	0.2926773
	11	276 34 42.5	35 8.25	53.6	1 22 17.8	45.67	0.1578395	0.2900763	0.2874619
	15	278 55 41.5	35 21.17	53.1	1 25 17.0	43.84	0.1565223	0.2848342	0.2821942
	19	281 17 31.5	35 33.87	52.0	1 28 8.5	41.87	0.1552389	0.2795428	0.2768814
	23	283 40 11.7	35 46.19	+50.5	−1 30 52.0	−39.80	0.1539913	0.2742102	0.2715299
	27	286 3 40.8	35 58.21	48.9	1 33 26.9	37.61	0.1527827	0.2688416	0.2661447
	31	288 27 57.4	36 9.97	46.9	1 35 52.9	35.31	0.1516157	0.2634396	0.2607259
Apr.	4	290 53 0.2	36 21.34	44.5	1 38 9.4	32.89	0.1504924	0.2580035	0.2552720
	8	293 18 47.7	36 32.26	41.8	1 40 16.0	30.37	0.1494161	0.2525308	0.2497804
	12	295 45 17.9	36 42.74	+38.8	−1 42 12.4	−27.76	0.1483890	0.2470210	0.2442527
	16	298 12 29.0	36 52.71	35.3	1 43 58.1	25.04	0.1474135	0.2414767	0.2386931
	20	300 40 19.1	37 2.16	31.8	1 45 32.7	22.24	0.1464923	0.2359029	0.2331065
	24	303 8 46.0	37 11.08	27.8	1 46 56.0	19.40	0.1456275	0.2303040	0.2274953
	28	305 37 47.3	37 19.42	23.8	1 48 7.9	16.40	0.1448214	0.2246800	0.2218580
May	2	308 7 20.8	37 27.17	+19.5	−1 49 7.2	−13.34	0.1440760	0.2190281	0.2161896
	6	310 37 24.1	37 34.28	15.1	1 49 54.5	10.27	0.1433931	0.2133416	0.2104837
	10	313 7 54.4	37 40.74	10.5	1 50 29.4	7.14	0.1427749	0.2076158	0.2047375
	14	315 38 49.3	37 46.51	5.8	1 50 51.6	3.95	0.1422228	0.2018491	0.1989504
	18	318 10 5.8	37 51.58	+ 1.1	1 51 1.0	− 0.73	0.1417382	0.1960418	0.1931236
	22	320 41 41.2	37 55.93	− 3.7	−1 50 57.5	+ 2.49	0.1413226	0.1901958	0.1872576
	26	323 13 32.5	37 59.51	8.4	1 50 41.1	5.74	0.1409767	0.1843084	0.1813473
	30	325 45 36.6	38 2.38	13.0	1 50 11.6	8.99	0.1407022	0.1783728	0.1753838
June	3	328 17 50.8	38 4.50	17.6	1 49 29.2	12.22	0.1404995	0.1723787	0.1693563
	7	330 50 11.9	38 5.85	22.0	1 48 33.8	15.45	0.1403691	0.1663153	0.1632555
	11	333 22 36.8	38 6.41	−26.3	−1 47 25.6	+18.62	0.1403114	0.1601755	0.1570757
	15	335 55 2.4	38 6.20	30.4	1 46 4.8	21.76	0.1403263	0.1539555	0.1508147
	19	338 27 25.6	38 5.21	34.2	1 44 31.5	24.86	0.1404143	0.1476530	0.1444694
	23	340 59 43.3	38 3.42	37.8	1 42 45.9	27.89	0.1405747	0.1412627	0.1380317
	27	343 31 52.2	38 0.85	41.0	1 40 48.4	30.84	0.1408072	0.1347741	0.1314878
July	1	346 3 49.4	37 57.59	−43.9	−1 38 39.2	+33.72	0.1411115	0.1281718	0.1248233
	5	348 35 32.2	37 53.61	46.5	−1 36 18.6	+36.50	0.1414861	0.1214404	0.1180224

MARS.

GREENWICH MEAN NOON.

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							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
ly 1	346 3 49.4	37 57.59	−43.9	−1 38 39.2	+33.72	0.1411115	0.1281718	0.1248233
5	348 35 32.2	37 53.61	46.5	1 36 18.6	36.50	0.1414861	0.1214404	0.1180224
9	351 6 57.6	37 48.89	48.7	1 33 47.2	39.19	0.1419303	0.1145681	0.1110757
13	353 38 2.6	37 43.48	50.5	1 31 5.1	41.79	0.1424430	0.1075453	0.1039759
17	356 8 44.7	37 37.35	52.0	1 28 13.0	44.24	0.1430226	0.1003670	0.0967168
21	358 39 0.7	37 30.54	−53.1	−1 25 11.2	+46.60	0.1436678	0.0930245	0.0892884
25	1 8 48.3	37 23.09	53.7	1 22 0.2	48.81	0.1443767	0.0855061	0.0816746
29	3 38 4.8	37 14.99	53.9	1 18 40.7	50.89	0.1451473	0.0777919	0.0738551
g. 2	6 6 47.6	37 6.38	53.7	1 15 13.1	52.85	0.1459778	0.0698625	0.0658116
6	8 34 55.3	36 57.26	53.2	1 11 37.9	54.69	0.1468661	0.0617009	0.0575300
10	11 2 25.1	36 47.50	−52.2	−1 7 55.6	+56.39	0.1478098	0.0532961	0.0489995
14	13 29 14.8	36 37.30	50.6	1 4 6.8	57.92	0.1488067	0.0446398	0.0402147
18	15 55 23.1	36 26.67	49.0	1 0 12.2	59.31	0.1498543	0.0357242	0.0311652
22	18 20 47.8	36 15.55	47.1	0 56 12.3	60.57	0.1509500	0.0265360	0.0218341
26	20 45 27.2	36 4.02	44.7	0 52 7.6	61.69	0.1520913	0.0170575	0.0122024
30	23 9 19.7	35 52.20	−41.8	−0 47 58.8	+62.66	0.1532756	0.0072672	0.0022504
pt. 3	25 32 24.6	35 40.10	38.9	0 43 46.3	63.51	0.1545003	9.9971498	9.9919649
7	27 54 40.3	35 27.64	35.9	0 39 30.7	64.20	0.1557627	9.9866953	9.9813413
11	30 16 5.5	35 14.89	32.4	0 35 12.7	64.76	0.1570598	9.9759027	9.9703804
15	32 36 39.2	35 1.92	28.8	0 30 52.6	65.20	0.1583891	9.9647746	9.9590855
19	34 56 20.6	34 48.77	−25.0	−0 26 31.1	+65.50	0.1597479	9.9533112	9.9474520
23	37 15 9.1	34 35.43	21.1	0 22 8.6	65.69	0.1611334	9.9415073	9.9354765
27	39 33 3.9	34 21.96	17.0	0 17 45.6	65.74	0.1625429	9.9293608	9.9231609
t. 1	41 50 4.7	34 8.40	12.9	0 13 22.7	65.65	0.1639739	9.9168792	9.9105198
5	44 6 11.1	33 54.76	8.7	0 9 0.4	65.50	0.1654235	9.9040871	9.8975871
9	46 21 22.8	33 41.07	− 4.5	−0 4 38.7	+65.24	0.1668890	9.8910260	9.8844129
13	48 35 39.7	33 27.36	− 0.3	−0 0 18.5	64.83	0.1683682	9.8777558	9.8710624
17	50 49 1.7	33 13.65	+ 3.9	+0 3 59.9	64.34	0.1698580	9.8643421	9.8576059
21	53 1 28.9	32 59.94	8.0	0 8 16.2	63.77	0.1713566	9.8508644	9.8441302
25	55 13 1.2	32 46.30	12.0	0 12 30.1	63.11	0.1728612	9.8374174	9.8307439
29	57 23 39.3	32 32.71	+16.0	+0 16 41.1	+62.35	0.1743693	9.8241284	9.8175927
v. 2	59 33 22.9	32 19.19	19.8	0 20 48.9	61.52	0.1758789	9.8111640	9.8048687
6	61 42 12.9	32 5.78	23.5	0 24 53.3	60.61	0.1773879	9.7987371	9.7928005
10	63 50 9.4	31 52.49	27.0	0 28 53.8	59.64	0.1788941	9.7870929	9.7816467
14	65 57 13.0	31 39.36	30.5	0 32 50.4	58.60	0.1803951	9.7764954	9.7716749
18	68 3 24.5	31 26.37	+33.6	+0 36 42.6	+57.50	0.1818892	9.7672195	9.7631633
22	70 8 44.3	31 13.57	36.6	0 40 30.4	56.34	0.1833745	9.7595429	9.7563918
26	72 13 13.2	31 0.93	39.3	0 44 13.3	55.12	0.1848490	9.7537447	9.7516340
30	74 16 52.1	30 48.50	41.9	0 47 51.4	53.87	0.1863108	9.7500912	9.7491411
c. 4	76 19 41.7	30 36.27	44.2	0 51 24.3	52.56	0.1877584	9.7488054	9.7490993
8	78 21 42.7	30 24.27	+46.4	+0 54 51.9	+51.22	0.1891902	9.7500318	9.7516027
12	80 22 56.2	30 12.52	48.1	0 58 14.1	49.84	0.1906044	9.7538073	9.7566325
16	82 23 23.1	30 0.95	49.7	1 1 30.6	48.41	0.1919996	9.7600626	9.7640730
20	84 23 4.1	29 49.61	51.0	1 4 41.4	46.96	0.1933743	9.7686407	9.7737355
24	86 22 0.3	29 38.56	52.1	1 7 46.3	45.49	0.1947273	9.7793265	9.7853822
28	88 20 12.9	29 27.80	+53.0	+1 10 45.3	+43.99	0.1960572	9.7918678	9.7987482
32	90 17 43.0	29 17.26	+53.5	+1 13 38.2	+42.44	0.1973627	9.8059871	

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 3	122 25 32.1	4 50.37	+19.5	+0 30 48.4	+6.10	0.7224475	0.6399923	0.6388048
7	122 44 53.3	4 50.22	19.8	0 31 12.8	6.08	0.7225613	0.6377302	0.6367718
11	123 4 13.9	4 50.07	20.0	0 31 37.1	6.06	0.7226748	0.6359322	0.6352141
15	123 23 33.9	4 49.92	20.2	0 32 1.3	6.05	0.7227881	0.6346202	0.6341524
19	123 42 53.3	4 49.77	20.4	0 32 25.4	6.03	0.7229011	0.6338116	0.6335986
23	124 2 12.0	4 49.62	+20.6	+0 32 49.5	+6.01	0.7230138	0.6335139	0.6335579
27	124 21 30.2	4 49.47	20.8	0 33 13.5	5.99	0.7231263	0.6337299	0.6340291
31	124 40 47.8	4 49.31	21.0	0 33 37.5	5.97	0.7232385	0.6344547	0.6350057
Feb. 4	125 0 4.7	4 49.17	21.2	0 34 1.3	5.96	0.7233505	0.6356809	0.6364785
8	125 19 21.1	4 49.02	21.4	0 34 25.1	5.94	0.7234622	0.6373965	0.6384328
12	125 38 36.9	4 48.87	+21.5	+0 34 48.8	+5.92	0.7235736	0.6395846	0.6408492
16	125 57 52.1	4 48.73	21.7	0 35 12.4	5.90	0.7236847	0.6422227	0.6437018
20	126 17 6.7	4 48.58	21.9	0 35 36.0	5.88	0.7237955	0.6452821	0.6469599
24	126 36 20.8	4 48.43	22.1	0 35 59.4	5.86	0.7239060	0.6487304	0.6505890
28	126 55 34.2	4 48.29	22.3	0 36 22.8	5.84	0.7240162	0.6525316	0.6545543
Mar. 3	127 14 47.1	4 48.15	+22.4	+0 36 46.1	+5.82	0.7241261	0.6566525	0.6588219
7	127 33 59.3	4 47.99	22.6	0 37 9.4	5.80	0.7242356	0.6610583	0.6633575
11	127 53 11.0	4 47.85	22.8	0 37 32.5	5.78	0.7243449	0.6657149	0.6681257
15	128 12 22.1	4 47.71	22.9	0 37 55.6	5.75	0.7244537	0.6705856	0.6730896
19	128 31 32.7	4 47.56	23.1	0 38 18.5	5.73	0.7245622	0.6756333	0.6782120
23	128 50 42.6	4 47.42	+23.3	+0 38 41.4	+5.71	0.7246703	0.6808217	0.6834578
27	129 9 52.1	4 47.28	23.4	0 39 4.2	5.69	0.7247782	0.6861167	0.6887944
31	129 29 0.9	4 47.14	23.6	0 39 27.0	5.67	0.7248856	0.6914875	0.6941925
Apr. 4	129 48 9.2	4 47.00	23.7	0 39 49.6	5.65	0.7249928	0.6969063	0.6996256
8	130 7 16.9	4 46.86	23.9	0 40 12.2	5.63	0.7250996	0.7023473	0.7050683
12	130 26 24.0	4 46.72	+24.0	+0 40 34.6	+5.61	0.7252061	0.7077853	0.7104948
16	130 45 30.6	4 46.58	24.2	0 40 57.0	5.59	0.7253123	0.7131940	0.7158800
20	131 4 36.7	4 46.44	24.3	0 41 19.3	5.56	0.7254181	0.7185504	0.7212028
24	131 23 42.1	4 46.30	24.4	0 41 41.5	5.54	0.7255237	0.7238351	0.7264449
28	131 42 47.1	4 46.17	24.6	0 42 3.6	5.52	0.7256289	0.7290305	0.7315901
May 2	132 1 51.5	4 46.03	+24.7	+0 42 25.7	+5.50	0.7257338	0.7341221	0.7366251
6	132 20 55.3	4 45.89	24.8	0 42 47.6	5.47	0.7258383	0.7390972	0.7415368
10	132 39 58.6	4 45.76	24.9	0 43 9.5	5.45	0.7259425	0.7439422	0.7463118
14	132 59 1.4	4 45.62	25.0	0 43 31.2	5.43	0.7260463	0.7486441	0.7509376
18	133 18 3.6	4 45.48	25.1	0 43 52.9	5.41	0.7261498	0.7531912	0.7554036
22	133 37 5.3	4 45.35	+25.2	+0 44 14.5	+5.39	0.7262529	0.7575740	0.7597017
26	133 56 6.4	4 45.21	25.3	0 44 36.0	5.36	0.7263557	0.7617858	0.7638256
30	134 15 7.0	4 45.08	25.5	0 44 57.4	5.34	0.7264581	0.7658204	0.7677697
June 3	134 34 7.0	4 44.94	25.6	0 45 18.7	5.32	0.7265601	0.7696728	0.7715289
7	134 53 6.5	4 44.81	25.7	0 45 39.9	5.29	0.7266618	0.7733373	0.7750971
11	135 12 5.5	4 44.68	+25.8	+0 46 1.1	+5.27	0.7267630	0.7768075	0.7784677
15	135 31 3.9	4 44.55	25.9	0 46 22.1	5.25	0.7268639	0.7800774	0.7816361
19	135 50 1.9	4 44.42	26.0	0 46 43.0	5.22	0.7269644	0.7831435	0.7845994
23	136 8 59.3	4 44.29	26.0	0 47 3.9	5.20	0.7270645	0.7860035	0.7873557
27	136 27 56.2	4 44.16	26.1	0 47 24.6	5.17	0.7271643	0.7886558	0.7899037
July 1	136 46 52.5	4 44.03	+26.2	+0 47 45.3	+5.15	0.7272637	0.7910990	0.7922413
5	137 5 48.4	4 43.90	+26.3	+0 48 5.8	+5.13	0.7273627	0.7933302	0.7943652

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
ly 1	136 46 52.5	4 44.03	+26.2	+0 47 45.3	+5.15	0.7272637	0.7910990	0.7922413
5	137 5 48.4	4 43.90	26.3	0 48 5.8	5.13	0.7273627	0.7933302	0.7943652
9	137 24 43.7	4 43.77	26.4	0 48 26.3	5.10	0.7274613	0.7953460	0.7962723
13	137 43 38.5	4 43.65	26.4	0 48 46.7	5.08	0.7275596	0.7971440	0.7979606
17	138 2 32.9	4 43.52	26.5	0 49 6.9	5.05	0.7276574	0.7987222	0.7994286
21	138 21 26.7	4 43.40	+26.5	+0 49 27.1	+5.03	0.7277548	0.8000799	0.8006763
25	138 40 20.1	4 43.27	26.6	0 49 47.1	5.00	0.7278519	0.8012176	0.8017038
29	138 59 12.9	4 43.15	26.6	0 50 7.1	4.98	0.7279485	0.8021349	0.8025109
g. 2	139 18 5.3	4 43.02	26.7	0 50 27.0	4.95	0.7280447	0.8028314	0.8030958
6	139 36 57.1	4 42.90	26.7	0 50 46.7	4.93	0.7281404	0.8033039	0.8034557
10	139 55 48.4	4 42.77	+26.8	+0 51 6.4	+4.90	0.7282358	0.8035510	0.8035898
14	140 14 39.3	4 42.65	26.8	0 51 25.9	4.88	0.7283308	0.8035720	0.8034980
18	140 33 29.7	4 42.52	26.9	0 51 45.4	4.85	0.7284253	0.8033675	0.8031809
22	140 52 19.5	4 42.40	26.9	0 52 4.8	4.83	0.7285194	0.8029382	0.8026397
26	141 11 8.9	4 42.28	27.0	0 52 24.0	4.80	0.7286130	0.8022852	0.8018746
30	141 29 57.7	4 42.16	+27.0	+0 52 43.2	+4.78	0.7287062	0.8014077	0.8008845
pt. 3	141 48 46.2	4 42.05	27.0	0 53 2.2	4.75	0.7287989	0.8003048	0.7996684
7	142 7 34.1	4 41.93	27.0	0 53 21.2	4.72	0.7288912	0.7989754	0.7982258
11	142 26 21.6	4 41.81	27.0	0 53 40.0	4.70	0.7289830	0.7974199	0.7965580
15	142 45 8.6	4 41.69	27.1	0 53 58.7	4.67	0.7290744	0.7956403	0.7946672
19	143 3 55.1	4 41.57	+27.1	+0 54 17.4	+4.65	0.7291653	0.7936390	0.7925561
23	143 22 41.2	4 41.45	27.1	0 54 35.9	4.62	0.7292558	0.7914184	0.7902261
27	143 41 26.8	4 41.34	27.1	0 54 54.3	4.59	0.7293459	0.7889792	0.7876779
ct. 1	144 0 11.9	4 41.22	27.1	0 55 12.7	4.57	0.7294355	0.7863225	0.7849129
5	144 18 56.6	4 41.11	27.1	0 55 30.9	4.54	0.7295246	0.7834497	0.7819331
9	144 37 40.8	4 41.00	+27.1	+0 55 49.0	+4.51	0.7296132	0.7803637	0.7787422
13	144 56 24.6	4 40.89	27.1	0 56 7.0	4.49	0.7297014	0.7770694	0.7753459
17	145 15 7.9	4 40.78	27.1	0 56 24.9	4.46	0.7297891	0.7735725	0.7717500
21	145 33 50.8	4 40.66	27.1	0 56 42.7	4.43	0.7298764	0.7698790	0.7679602
25	145 52 33.2	4 40.55	27.1	0 57 0.3	4.41	0.7299632	0.7659943	0.7639818
29	146 11 15.2	4 40.44	+27.1	+0 57 17.9	+4.38	0.7300496	0.7619236	0.7598205
ov. 2	146 29 56.7	4 40.33	27.1	0 57 35.4	4.35	0.7301355	0.7576735	0.7554838
6	146 48 37.8	4 40.22	27.1	0 57 52.7	4.33	0.7302209	0.7532529	0.7509822
10	147 7 18.4	4 40.11	27.1	0 58 10.0	4.30	0.7303060	0.7486734	0.7463282
14	147 25 58.7	4 40.00	27.0	0 58 27.1	4.27	0.7303906	0.7439482	0.7415352
18	147 44 38.5	4 39.90	+27.0	+0 58 44.1	+4.24	0.7304747	0.7390908	0.7366168
22	148 3 17.9	4 39.79	27.0	0 59 1.1	4.22	0.7305583	0.7341149	0.7315870
26	148 21 56.8	4 39.69	27.0	0 59 17.9	4.19	0.7306415	0.7290351	0.7264612
30	148 40 35.4	4 39.58	26.9	0 59 34.6	4.16	0.7307242	0.7238679	0.7212576
ec. 4	148 59 13.5	4 39.48	26.9	0 59 51.1	4.13	0.7308064	0.7186333	0.7159978
8	149 17 51.2	4 39.37	+26.8	+1 0 7.6	+4.10	0.7308881	0.7133544	0.7107065
12	149 36 28.5	4 39.27	26.8	1 0 24.0	4.08	0.7309693	0.7080572	0.7054095
16	149 55 5.3	4 39.16	26.7	1 0 40.2	4.05	0.7310501	0.7027669	0.7001329
20	150 13 41.7	4 39.06	26.6	1 0 56.4	4.02	0.7311303	0.6975109	0.6949039
24	150 32 17.8	4 38.96	26.6	1 1 12.4	3.99	0.7312099	0.6923160	0.6897510
28	150 50 53.4	4 38.86	+26.5	+1 1 28.3	+3.96	0.7312891	0.6872130	0.6847062
32	151 9 28.7	4 38.76	+26.4	+1 1 44.1	+3.93	0.7313678	0.6822350	

SATURN.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of D from Earth	
							At Date.	At dia
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 3	221 56 46.9	1 52.80	−1 0.6	+2 21 11.4	−1.61	0.9939788	1.0161230	1.0
7	222 4 18.1	1 52.78	1 1.0	2 21 5.0	1.62	0.9940202	1.0137577	1.0
11	222 11 49.1	1 52.76	1 1.3	2 20 58.4	1.64	0.9940616	1.0112852	1.0
15	222 19 20.2	1 52.74	1 1.6	2 20 51.8	1.65	0.9941029	1.0087140	1.0
19	222 26 51.1	1 52.72	1 1.8	2 20 45.2	1.66	0.9941441	1.0060552	1.0
23	222 34 22.0	1 52.70	−1 2.1	+2 20 38.5	−1.67	0.9941852	1.0033179	1.0
27	222 41 52.7	1 52.68	1 2.4	2 20 31.8	1.68	0.9942262	1.0005144	0.9
31	222 49 23.4	1 52.66	1 2.7	2 20 25.0	1.69	0.9942671	0.9976552	0.9
Feb. 4	222 56 53.9	1 52.64	1 3.0	2 20 18.3	1.70	0.9943079	0.9947517	0.9
8	223 4 24.4	1 52.61	1 3.3	2 20 11.5	1.71	0.9943486	0.9918156	0.9
12	223 11 54.8	1 52.59	−1 3.6	+2 20 4.6	−1.72	0.9943893	0.9888603	0.9
16	223 19 25.2	1 52.57	1 3.9	2 19 57.7	1.73	0.9944299	0.9859002	0.9
20	223 26 55.4	1 52.55	1 4.2	2 19 50.8	1.74	0.9944704	0.9829511	0.9
24	223 34 25.6	1 52.53	1 4.5	2 19 43.8	1.75	0.9945108	0.9800280	0.9
28	223 41 55.7	1 52.51	1 4.8	2 19 36.8	1.76	0.9945512	0.9771456	0.9
Mar. 3	223 49 25.7	1 52.49	−1 5.1	+2 19 29.7	−1.77	0.9945915	0.9743186	0.9
7	223 56 55.6	1 52.47	1 5.4	2 19 22.6	1.78	0.9946317	0.9715619	0.9
11	224 4 25.5	1 52.45	1 5.7	2 19 15.5	1.78	0.9946718	0.9688915	0.9
15	224 11 55.3	1 52.43	1 6.0	2 19 8.4	1.79	0.9947117	0.9663241	0.9
19	224 19 25.0	1 52.41	1 6.3	2 19 1.2	1.80	0.9947516	0.9638760	0.9
23	224 26 54.6	1 52.39	−1 6.6	+2 18 54.0	−1.81	0.9947915	0.9615631	0.9
27	224 34 24.1	1 52.37	1 6.9	2 18 46.7	1.82	0.9948313	0.9593994	0.9
31	224 41 53.5	1 52.35	1 7.3	2 18 39.4	1.83	0.9948710	0.9573980	0.9
Apr. 4	224 49 22.9	1 52.33	1 7.6	2 18 32.1	1.84	0.9949107	0.9555719	0.9
8	224 56 52.2	1 52.31	1 7.9	2 18 24.7	1.85	0.9949503	0.9539333	0.9
12	225 4 21.4	1 52.29	−1 8.2	+2 18 17.3	−1.86	0.9949898	0.9524948	0.9
16	225 11 50.5	1 52.27	1 8.5	2 18 9.9	1.87	0.9950292	0.9512665	0.9
20	225 19 19.5	1 52.25	1 8.8	2 18 2.4	1.87	0.9950685	0.9502578	0.9
24	225 26 48.4	1 52.23	1 9.1	2 17 54.9	1.88	0.9951077	0.9494746	0.9
28	225 34 17.3	1 52.21	1 9.4	2 17 47.4	1.89	0.9951468	0.9489211	0.9
May 2	225 41 46.1	1 52.19	−1 9.7	+2 17 39.9	−1.90	0.9951858	0.9486007	0.9
6	225 49 14.8	1 52.17	1 10.0	2 17 32.3	1.91	0.9952248	0.9485160	0.9
10	225 56 43.5	1 52.15	1 10.3	2 17 24.6	1.92	0.9952637	0.9486679	0.9
14	226 4 12.0	1 52.13	1 10.6	2 17 16.9	1.93	0.9953024	0.9490559	0.9
18	226 11 40.5	1 52.11	1 10.9	2 17 9.2	1.94	0.9953411	0.9496764	0.9
22	226 19 8.9	1 52.09	−1 11.2	+2 17 1.4	−1.95	0.9953798	0.9505237	0.9
26	226 26 37.3	1 52.07	1 11.5	2 16 53.6	1.96	0.9954184	0.9515900	0.9
30	226 34 5.5	1 52.05	1 11.8	2 16 45.7	1.96	0.9954569	0.9528674	0.9
June 3	226 41 33.7	1 52.03	1 12.1	2 16 37.9	1.97	0.9954953	0.9543471	0.9
7	226 49 1.8	1 52.01	1 12.3	2 16 30.0	1.98	0.9955336	0.9560194	0.9
11	226 56 29.8	1 51.99	−1 12.6	+2 16 22.0	−1.99	0.9955719	0.9578738	0.9
15	227 3 57.7	1 51.97	1 12.9	2 16 14.0	2.00	0.9956101	0.9598973	0.9
19	227 11 25.6	1 51.95	1 13.2	2 16 6.0	2.01	0.9956482	0.9620756	0.9
23	227 18 53.4	1 51.94	1 13.5	2 15 57.9	2.02	0.9956862	0.9643943	0.9
27	227 26 21.1	1 51.92	1 13.7	2 15 49.8	2.03	0.9957241	0.9668388	0.9
July 1	227 33 48.8	1 51.90	−1 14.0	+2 15 41.7	−2.04	0.9957619	0.9693955	0.9
5	227 41 16.3	1 51.88	−1 14.3	+2 15 33.5	−2.05	0.9957996	0.9720508	0.9

SATURN.

GREENWICH MEAN NOON.

ate.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	′ ″	′ ″	° ′ ″	″			
y 1	227 33 48.8	1 51.90	−1 14.0	+2 15 41.7	−2.04	0.9957619	0.9693955	0.9707117
5	227 41 16.3	1 51.88	1 14.3	2 15 33.5	2.05	0.9957996	0.9720508	0.9734110
9	227 48 43.8	1 51.86	1 14.6	2 15 25.3	2.06	0.9958372	0.9747903	0.9761869
13	227 56 11.3	1 51.84	1 14.9	2 15 17.0	2.07	0.9958747	0.9775989	0.9790244
17	228 3 38.6	1 51.82	1 15.1	2 15 8.7	2.08	0.9959121	0.9804615	0.9819083
21	228 11 5.9	1 51.81	−1 15.4	+2 15 0.4	−2.08	0.9959495	0.9833631	0.9848242
25	228 18 33.0	1 51.79	1 15.7	2 14 52.0	2.09	0.9959868	0.9862899	0.9877587
29	228 26 0.1	1 51.77	1 15.9	2 14 43.6	2.10	0.9960240	0.9892291	0.9906996
g. 2	228 33 27.2	1 51.75	1 16.2	2 14 35.2	2.11	0.9960611	0.9921687	0.9936349
6	228 40 54.2	1 51.73	1 16.4	2 14 26.8	2.12	0.9960982	0.9950966	0.9965521
10	228 48 21.1	1 51.71	−1 16.7	+2 14 18.3	−2.13	0.9961352	0.9980000	0.9994387
14	228 55 47.9	1 51.69	1 17.0	2 14 9.7	2.14	0.9961721	1.0008668	1.0022827
18	229 3 14.6	1 51.67	1 17.2	2 14 1.1	2.15	0.9962089	1.0036852	1.0050731
22	229 10 41.3	1 51.65	1 17.5	2 13 52.5	2.16	0.9962456	1.0064452	1.0078004
26	229 18 7.9	1 51.64	1 17.7	2 13 43.9	2.16	0.9962821	1.0091377	1.0104560
30	229 25 34.4	1 51.62	−1 17.9	+2 13 35.2	−2.17	0.9963186	1.0117543	1.0130314
pt. 3	229 33 0.8	1 51.60	1 18.2	2 13 26.5	2.18	0.9963550	1.0142863	1.0155179
7	229 40 27.2	1 51.58	1 18.5	2 13 17.7	2.19	0.9963914	1.0167251	1.0179069
11	229 47 53.5	1 51.56	1 18.7	2 13 8.9	2.20	0.9964277	1.0190622	1.0201900
15	229 55 19.7	1 51.55	1 19.0	2 13 0.1	2.21	0.9964639	1.0212896	1.0223601
19	230 2 45.9	1 51.53	−1 19.2	+2 12 51.2	−2.22	0.9965000	1.0234010	1.0244115
23	230 10 12.0	1 51.51	1 19.5	2 12 42.3	2.23	0.9965360	1.0253911	1.0263390
27	230 17 38.0	1 51.49	1 19.7	2 12 33.4	2.24	0.9965719	1.0272547	1.0281374
t. 1	230 25 3.9	1 51.47	1 20.0	2 12 24.4	2.24	0.9966077	1.0289866	1.0298016
5	230 32 29.8	1 51.46	1 20.2	2 12 15.4	2.25	0.9966433	1.0305817	1.0313259
9	230 39 55.6	1 51.44	−1 20.5	+2 12 6.4	−2.26	0.9966789	1.0320340	1.0327053
13	230 47 21.3	1 51.42	1 20.7	2 11 57.3	2.27	0.9967144	1.0333396	1.0339363
17	230 54 46.9	1 51.40	1 21.0	2 11 48.2	2.28	0.9967499	1.0344951	1.0350158
21	231 2 12.5	1 51.38	1 21.2	2 11 39.1	2.29	0.9967853	1.0354982	1.0359418
25	231 9 38.0	1 51.37	1 21.4	2 11 29.9	2.30	0.9968206	1.0363465	1.0367121
29	231 17 3.5	1 51.35	−1 21.7	+2 11 20.7	−2.31	0.9968558	1.0370379	1.0373237
v. 2	231 24 28.8	1 51.33	1 21.9	2 11 11.4	2.32	0.9968909	1.0375692	1.0377741
6	231 31 54.1	1 51.31	1 22.1	2 11 2.1	2.33	0.9969259	1.0379383	1.0380615
10	231 39 19.4	1 51.30	1 22.3	2 10 52.8	2.34	0.9969608	1.0381436	1.0381845
14	231 46 44.5	1 51.28	1 22.5	2 10 43.4	2.35	0.9969955	1.0381843	1.0381432
18	231 54 9.6	1 51.26	−1 22.8	+2 10 34.0	−2.35	0.9970302	1.0380612	1.0379384
22	232 1 34.6	1 51.25	1 23.0	2 10 24.6	2.36	0.9970648	1.0377748	1.0375702
26	232 8 59.5	1 51.23	1 23.2	2 10 15.1	2.37	0.9970994	1.0373249	1.0370392
30	232 16 24.4	1 51.21	1 23.4	2 10 5.6	2.38	0.9971340	1.0367128	1.0363457
c. 4	232 23 49.2	1 51.19	1 23.6	2 9 56.1	2.39	0.9971685	1.0359380	1.0354899
8	232 31 13.9	1 51.18	−1 23.9	+2 9 46.5	−2.40	0.9972029	1.0350017	1.0344739
12	232 38 38.6	1 51.16	1 24.1	2 9 36.9	2.41	0.9972371	1.0339069	1.0333014
16	232 46 3.2	1 51.14	1 24.3	2 9 27.3	2.42	0.9972712	1.0326576	1.0319758
20	232 53 27.7	1 51.12	1 24.5	2 9 17.6	2.42	0.9973052	1.0312566	1.0305007
24	233 0 52.2	1 51.11	1 24.7	2 9 7.9	2.43	0.9973391	1.0297083	1.0288797
28	233 8 16.6	1 51.09	−1 24.9	+2 8 58.2	−2.44	0.9973729	1.0280156	1.0271163
32	233 15 40.9	1 51.07	−1 25.1	+2 8 48.4	−2.45	0.9974067	1.0261827	

URANUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan. 7	230 55 52.2	44.40	−6.6	+0 17 49.4	−0.55	1.2725892	1.2855985	1.2843348
15	231 1 47.4	44.40	6.6	0 17 45.0	0.55	1.2726207	1.2830103	1.2816306
23	231 7 42.6	44.39	6.6	0 17 40.6	0.55	1.2726522	1.2802021	1.2787317
31	231 13 37.7	44.38	6.6	0 17 36.1	0.55	1.2726837	1.2772252	1.2756890
Feb. 8	231 19 32.8	44.38	6.6	0 17 31.7	0.55	1.2727153	1.2741301	1.2725553
16	231 25 27.8	44.37	−6.5	+0 17 27.3	−0.55	1.2727469	1.2709726	1.2693902
24	231 31 22.8	44.37	6.5	0 17 22.9	0.55	1.2727786	1.2678161	1.2662578
Mar. 3	231 37 17.7	44.36	6.5	0 17 18.4	0.55	1.2728103	1.2647228	1.2632185
11	231 43 12.6	44.36	6.5	0 17 14.0	0.55	1.2728420	1.2617529	1.2603341
19	231 49 7.5	44.35	6.4	0 17 9.6	0.55	1.2728737	1.2589700	1.2576684
27	231 55 2.3	44.35	−6.4	+0 17 5.1	−0.55	1.2729055	1.2564361	1.2552793
Apr. 4	232 0 57.0	44.34	6.4	0 17 0.7	0.55	1.2729373	1.2542043	1.2532171
12	232 6 51.7	44.34	6.4	0 16 56.3	0.56	1.2729691	1.2523234	1.2515291
20	232 12 46.4	44.33	6.3	0 16 51.8	0.56	1.2730009	1.2508387	1.2502554
28	232 18 41.0	44.33	6.3	0 16 47.4	0.56	1.2730328	1.2497824	1.2494218
May 6	232 24 35.6	44.32	−6.3	+0 16 42.9	−0.56	1.2730647	1.2491758	1.2490458
14	232 30 30.1	44.31	6.3	0 16 38.4	0.56	1.2730967	1.2490335	1.2491382
22	232 36 24.6	44.31	6.2	0 16 34.0	0.56	1.2731287	1.2493585	1.2496927
30	232 42 19.0	44.30	6.2	0 16 29.6	0.56	1.2731607	1.2501386	1.2506935
June 7	232 48 13.4	44.29	6.2	0 16 25.1	0.56	1.2731927	1.2513544	1.2521181
15	232 54 7.8	44.29	−6.2	+0 16 20.7	−0.56	1.2732248	1.2529797	1.2539340
23	233 0 2.1	44.28	6.1	0 16 16.2	0.56	1.2732568	1.2549749	1.2560966
July 1	233 5 56.3	44.28	6.1	0 16 11.7	0.56	1.2732889	1.2572934	1.2585594
9	233 11 50.5	44.27	6.1	0 16 7.3	0.56	1.2733211	1.2598882	1.2612729
17	233 17 44.7	44.27	6.1	0 16 2.8	0.56	1.2733532	1.2627057	1.2641791
25	233 23 38.8	44.26	−6.0	+0 15 58.3	−0.56	1.2733854	1.2656863	1.2672200
Aug. 2	233 29 32.9	44.26	6.0	0 15 53.9	0.56	1.2734176	1.2687737	1.2703403
10	233 35 26.9	44.25	6.0	0 15 49.4	0.56	1.2734498	1.2719129	1.2734833
18	233 41 20.9	44.24	6.0	0 15 44.9	0.56	1.2734820	1.2750450	1.2765909
26	233 47 14.9	44.24	5.9	0 15 40.4	0.56	1.2735143	1.2781152	1.2796116
Sept. 3	233 53 8.8	44.23	−5.9	+0 15 36.0	−0.56	1.2735465	1.2810745	1.2824976
11	233 59 2.6	44.23	5.9	0 15 31.5	0.56	1.2735788	1.2838747	1.2852001
19	234 4 56.4	44.22	5.9	0 15 27.0	0.56	1.2736111	1.2864686	1.2876758
27	234 10 50.2	44.22	5.8	0 15 22.5	0.56	1.2736434	1.2888177	1.2898899
Oct. 5	234 16 43.9	44.21	5.8	0 15 18.0	0.56	1.2736757	1.2908879	1.2918078
13	234 22 37.6	44.20	−5.8	+0 15 13.5	−0.56	1.2737080	1.2926455	1.2933983
21	234 28 31.2	44.20	5.8	0 15 9.0	0.56	1.2737404	1.2940633	1.2946390
29	234 34 24.8	44.19	5.7	0 15 4.5	0.56	1.2737728	1.2951227	1.2955123
Nov. 6	234 40 18.3	44.19	5.7	0 15 0.0	0.56	1.2738052	1.2958059	1.2960018
14	234 46 11.8	44.18	5.7	0 14 55.5	0.56	1.2738376	1.2960996	1.2960991
22	234 52 5.2	44.17	−5.7	+0 14 51.0	−0.56	1.2738700	1.2960005	1.2958039
30	234 57 58.6	44.17	5.6	0 14 46.5	0.56	1.2739025	1.2955094	1.2951176
Dec. 8	235 3 52.0	44.16	5.6	0 14 42.0	0.56	1.2739350	1.2946293	1.2940468
16	235 9 45.3	44.16	5.6	0 14 37.5	0.56	1.2739675	1.2933723	1.2926085
24	235 15 38.5	44.15	5.6	0 14 33.0	0.56	1.2740000	1.2917585	1.2908246
32	235 21 31.7	44.15	−5.5	+0 14 28.4	−0.56	1.2740325	1.2898097	
40	235 27 24.9	44.14	−5.5	+0 14 23.9	−0.56	1.2740651		

NEPTUNE.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth – At Date.	Logarithm of Distance from Earth – At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan 7	76 49 28.6	22.01	−47.4	−1 26 10.7	+0.40	1.4750353	1.4625242	1.4630884
15	76 52 24.7	22.01	47.5	1 26 7.4	0.40	1.4750364	1.4637135	1.4643951
23	76 55 20.8	22.01	47.5	1 26 4.2	0.40	1.4750375	1.4651290	1.4659109
31	76 58 16.9	22.01	47.5	1 26 1.0	0.40	1.4750386	1.4667363	1.4676010
Feb 8	77 1 12.9	22.01	47.5	1 25 57.8	0.40	1.4750397	1.4685002	1.4694297
16	77 4 9.0	22.00	−47.5	−1 25 54.6	+0.40	1.4750408	1.4703840	1.4713580
24	77 7 5.0	22.00	47.6	1 25 51.3	0.40	1.4750419	1.4723465	1.4733442
Mar 3	77 10 1.1	22.00	47.6	1 25 48.1	0.40	1.4750429	1.4743467	1.4753492
11	77 12 57.1	22.00	47.6	1 25 44.9	0.41	1.4750440	1.4763471	1.4773356
19	77 15 53.2	22.00	47.6	1 25 41.6	0.41	1.4750451	1.4783100	1.4792655
27	77 18 49.2	22.00	−47.7	−1 25 38.4	+0.41	1.4750462	1.4801982	1.4811041
Apr 4	77 21 45.2	22.00	47.7	1 25 35.1	0.41	1.4750473	1.4819797	1.4828215
12	77 24 41.3	22.00	47.7	1 25 31.9	0.41	1.4750483	1.4836260	1.4843894
20	77 27 37.3	22.00	47.7	1 25 28.6	0.41	1.4750494	1.4851092	1.4857823
28	77 30 33.3	22.00	47.8	1 25 25.3	0.41	1.4750505	1.4864067	1.4869799
May 6	77 33 29.3	22.00	−47.8	−1 25 22.1	+0.41	1.4750516	1.4875002	1.4879655
14	77 36 25.3	22.00	47.8	1 25 18.8	0.41	1.4750526	1.4883743	1.4887243
22	77 39 21.3	22.00	47.8	1 25 15.5	0.41	1.4750537	1.4890152	1.4892461
30	77 42 17.3	22.00	47.9	1 25 12.2	0.41	1.4750548	1.4894165	1.4895257
June 7	77 45 13.3	22.00	47.9	1 25 9.0	0.41	1.4750558	1.4895733	1.4895585
15	77 48 9.3	22.00	−47.9	−1 25 5.7	+0.41	1.4750569	1.4894822	1.4893446
23	77 51 5.3	22.00	47.9	1 25 2.4	0.41	1.4750580	1.4891467	1.4888890
July 1	77 54 1.3	22.00	47.9	1 24 59.1	0.41	1.4750590	1.4885725	1.4881979
9	77 56 57.2	22.00	48.0	1 24 55.8	0.41	1.4750601	1.4877670	1.4872808
17	77 59 53.2	21.99	48.0	1 24 52.5	0.41	1.4750611	1.4867417	1.4861517
25	78 2 49.2	21.99	-48.0	−1 24 49.2	+0.41	1.4750621	1.4855130	1.4848276
Aug. 2	78 5 45.1	21.99	48.0	1 24 45.9	0.41	1.4750632	1.4840983	1.4833275
10	78 8 41.1	21.99	48.0	1 24 42.6	0.41	1.4750642	1.4825186	1.4816745
18	78 11 37.0	21.99	48.1	1 24 39.2	0.41	1.4750653	1.4807989	1.4798953
26	78 14 33.0	21.99	48.1	1 24 36.0	0.41	1.4750663	1.4789676	1.4780194
Sept. 3	78 17 28.9	21.99	−48.1	−1 24 32.7	+0.42	1.4750674	1.4770546	1.4760766
11	78 20 24.8	21.99	48.1	1 24 29.3	0.42	1.4750684	1.4750907	1.4741019
19	78 23 20.7	21.99	48.1	1 24 26.0	0.42	1.4750694	1.4731145	1.4721330
27	78 26 16.7	21.99	48.2	1 24 22.7	0.42	1.4750705	1.4711619	1.4702055
Oct. 5	78 29 12.6	21.99	48.2	1 24 19.3	0.42	1.4750715	1.4692689	1.4683571
13	78 32 8.5	21.99	−48.2	−1 24 16.0	+0.42	1.4750726	1.4674751	1.4666278
21	78 35 4.4	21.99	48.2	1 24 12.7	0.42	1.4750736	1.4658190	1.4650534
29	78 38 0.3	21.99	48.2	1 24 9.3	0.42	1.4750746	1.4643351	1.4636682
Nov 6	78 40 56.2	21.99	48.3	1 24 6.0	0.42	1.4750757	1.4630567	1.4625047
14	78 43 52.1	21.99	48.3	1 24 2.6	0.42	1.4750767	1.4620155	1.4615918
22	78 46 48.0	21.99	−48.3	−1 23 59.3	+0.42	1.4750777	1.4612356	1.4609496
30	78 49 43.9	21.98	48.3	1 23 55.9	0.42	1.4750788	1.4607355	1.4605949
Dec 8	78 52 39.7	21.98	48.4	1 23 52.6	0.42	1.4750798	1.4605291	1.4605386
16	78 55 35.6	21.98	48.4	1 23 49.2	0.42	1.4750808	1.4606230	1.4607819
24	78 58 31.5	21.98	48.4	1 23 45.8	0.42	1.4750818	1.4610143	1.4613190
32	79 1 27.3	21.98	−48.4	−1 23 42.5	+0.42	1.4750828	1.4616941	
40	79 4 23.2	21.98	−48.4	−1 23 39.1	+0.42	1.4750839		

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Jan. 0	+0.1642482	+0.1728616	−328	−0.8893099	−0.8879318	−200	−0.3858483	−0.3852506	+320
1	0.1814617	0.1900477	337	0.8864848	0.8849693	206	0.3846230	0.3839658	315
2	0.1986189	0.2071750	345	0.8833852	0.8817327	213	0.3832788	0.3825621	311
3	0.2157153	0.2242390	353	0.8800118	0.8782228	220	0.3818158	0.3810399	307
4	0.2327456	0.2412344	360	0.8763656	0.8744405	227	0.3802345	0.3793996	303
5	+0.2497049	+0.2581564	−367	−0.8724474	−0.8703863	−235	−0.3785353	−0.3776414	+298
6	0.2665882	0.2749997	374	0.8682575	0.8660612	242	0.3767181	0.3757655	293
7	0.2833903	0.2917591	380	0.8637975	0.8614666	250	0.3747836	0.3737726	288
8	0.3001057	0.3084294	387	0.8590685	0.8566035	258	0.3727324	0.3716632	283
9	0.3167295	0.3250052	393	0.8540717	0.8514729	266	0.3705649	0.3694375	277
10	+0.3332559	+0.3414808	−399	−0.8488076	−0.8460764	−274	−0.3682813	−0.3670964	+271
11	0.3496793	0.3578508	405	0.8432792	0.8404158	283	0.3658827	0.3646402	265
12	0.3659946	0.3741102	411	0.8374867	0.8344923	292	0.3633693	0.3620701	259
13	0.3821968	0.3902536	416	0.8314326	0.8283077	301	0.3607425	0.3593866	253
14	0.3982800	0.4062753	421	0.8251181	0.8218641	310	0.3580025	0.3565905	247
15	+0.4142389	+0.4221702	−426	−0.8185459	−0.8151635	−319	−0.3551506	−0.3536828	+240
16	0.4300685	0.4379328	430	0.8117175	0.8082084	328	0.3521873	0.3506645	233
17	0.4457628	0.4535580	434	0.8046363	0.8010012	338	0.3491144	0.3475369	226
18	0.4613177	0.4690413	438	0.7973037	0.7935446	347	0.3459323	0.3443010	219
19	0.4767280	0.4843770	441	0.7897238	0.7858413	357	0.3426429	0.3409581	212
20	+0.4919879	+0.4995606	−444	−0.7818976	−0.7778932	−367	−0.3392467	−0.3375090	+205
21	0.5070942	0.5145877	446	0.7738284	0.7697038	377	0.3357452	0.3339553	197
22	0.5220408	0.5294533	448	0.7655197	0.7612765	387	0.3321397	0.3302986	189
23	0.5368243	0.5441532	450	0.7569745	0.7526139	397	0.3284320	0.3265399	181
24	0.5514397	0.5586834	452	0.7481953	0.7437191	407	0.3246226	0.3226805	173
25	+0.5658836	+0.5730397	−453	−0.7391855	−0.7345948	−418	0.3207135	−0.3187218	+165
26	0.5801513	0.5872178	454	0.7299475	0.7252440	428	0.3167056	0.3146650	157
27	0.5942389	0.6012142	454	0.7204847	0.7156698	439	0.3126002	0.3105114	148
28	0.6081430	0.6150248	454	0.7108000	0.7058758	449	0.3083987	0.3062625	140
29	0.6218591	0.6286454	454	0.7008973	0.6958645	460	0.3041027	0.3019195	131
30	+0.6353833	+0.6420724	−453	−0.6907781	−0.6856388	−471	−0.2997130	−0.2974834	+123
31	0.6487122	0.6553024	452	0.6804467	0.6752020	481	0.2952310	0.2929559	114
Feb. 1	0.6618423	0.6683312	451	0.6699052	0.6645570	492	0.2906582	0.2883381	105
2	0.6747688	0.6811548	449	0.6591576	0.6537073	502	0.2859957	0.2836313	96
3	0.6874886	0.6937699	447	0.6482064	0.6426552	512	0.2812449	0.2788366	87
4	+0.6999981	+0.7061724	−444	−0.6370543	−0.6314044	−522	−0.2764067	−0.2739556	+ 78
5	0.7122925	0.7183582	441	0.6257057	0.6199583	532	0.2714833	0.2689899	69
6	0.7243688	0.7303238	437	0.6141628	0.6083195	542	0.2664755	0.2639403	60
7	0.7362227	0.7420653	433	0.6024291	0.5964923	552	0.2613846	0.2588088	51
8	0.7478509	0.7535786	429	0.5905093	0.5844803	562	0.2562130	0.2535970	41
9	+0.7592484	+0.7648601	−424	−0.5784059	−0.5722864	−572	−0.2509613	−0.2483063	+ 32
10	0.7704129	0.7759062	419	0.5661226	0.5599150	581	0.2456317	0.2429381	22
11	0.7813396	0.7867129	414	0.5536640	0.5473701	591	0.2402257	0.2374947	13
12	0.7920256	0.7972773	409	0.5410339	0.5346558	600	0.2347453	0.2319776	+ 3
13	0.8024674	0.8075954	403	0.5282364	0.5217760	609	0.2291920	0.2263887	− 7
14	+0.8126611	+0.8176640	−397	−0.5152754	−0.5087350	−618	−0.2235679	−0.2207298	− 17
15	+0.8226038	+0.8274802	−391	−0.5021555	−0.4955376	−627	−0.2178748	−0.2150032	− 27

FOR GREENWICH MEAN NOON AND MIDNIGHT.

ate.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
b. 15	+0.8226038	+0.8274802	−391	−0.5021555	−0.4955376	−627	−0.2178748	−0.2150032	− 27
16	0.8322927	0.8370411	384	0.4888818	0.4821884	636	0.2121151	0.2092107	37
17	0.8417250	0.8463438	377	0.4754580	0.4686912	645	0.2062903	0.2033540	47
18	0.8508975	0.8553857	369	0.4618886	0.4550507	653	0.2004022	0.1974353	57
19	0.8598082	0.8641647	361	0.4481785	0.4412722	662	0.1944534	0.1914567	67
20	+0.8684548	+0.8726779	−353	−0.4343324	−0.4273597	−670	−0.1884456	−0.1854202	− 77
21	0.8768340	0.8809230	345	0.4203546	0.4133179	679	0.1823809	0.1793279	87
22	0.8849447	0.8888987	336	0.4062500	0.3991514	687	0.1762613	0.1731814	97
23	0.8927848	0.8966030	327	0.3920225	0.3848639	695	0.1700885	0.1669828	107
24	0.9003529	0.9040342	317	0.3776763	0.3704605	703	0.1638645	0.1607339	117
25	+0.9076467	+0.9111902	−307	−0.3632169	−0.3559459	−711	−0.1575913	−0.1544369	−127
26	0.9146645	0.9180696	297	0.3486480	0.3413238	718	0.1512709	0.1480934	138
27	0.9214051	0.9246709	287	0.3339738	0.3265985	726	0.1449047	0.1417051	148
28	0.9278667	0.9309923	276	0.3191986	0.3117747	733	0.1384948	0.1352741	159
29	0.9340476	0.9370323	265	0.3043275	0.2968570	740	0.1320431	0.1288021	169
ar. 1	+0.9399462	+0.9427890	−254	−0.2893639	−0.2818490	−747	−0.1255514	−0.1222911	−180
2	0.9455607	0.9482614	243	0.2743126	0.2667550	754	0.1190214	0.1157426	191
3	0.9508907	0.9534482	231	0.2591771	0.2515795	760	0.1124549	0.1091586	201
4	0.9559336	0.9583467	219	0.2439626	0.2363270	766	0.1058539	0.1025411	212
5	0.9606876	0.9629562	207	0.2286733	0.2210018	772	0.0992204	0.0958919	222
6	+0.9651522	+0.9672753	−195	−0.2133133	−0.2056085	−778	−0.0925559	−0.0892130	−232
7	0.9693253	0.9713022	182	0.1978878	0.1901517	783	0.0858631	0.0825064	242
8	0.9732058	0.9750360	169	0.1824009	0.1746359	788	0.0791433	0.0757740	252
9	0.9767924	0.9784747	155	0.1668574	0.1590663	793	0.0723988	0.0690181	261
10	0.9800831	0.9816177	141	0.1512629	0.1434472	798	0.0656320	0.0622407	271
11	+0.9830780	+0.9844637	−127	−0.1356203	−0.1277834	−802	−0.0588445	−0.0554438	−280
12	0.9857750	0.9870122	113	0.1199367	0.1120806	806	0.0520389	0.0486300	290
13	0.9881748	0.9892626	99	0.1042159	0.0963435	810	0.0452173	0.0418012	299
14	0.9902757	0.9912139	85	0.0884638	0.0805773	814	0.0383820	0.0349600	309
15	0.9920773	0.9928657	70	0.0726848	0.0647868	817	0.0315353	0.0281082	318
16	+0.9935793	+0 9942180	− 55	−0.0568840	−0.0489772	−820	−0.0246790	−0.0212482	−327
17	0.9947818	0.9952705	40	0.0410669	0.0331538	823	0.0178159	0.0143824	336
18	0.9956844	0.9960236	25	0.0252383	0.0173210	826	0.0109479	0.0075127	345
19	0.9962880	0.9964778	− 9	−0.0094027	−0.0014841	828	−0.0040770	−0.0006412	354
20	0.9965930	0.9966335	+ 6	+0.0064342	+0.0143515	830	+0.0027943	+0.0062293	363
21	+0.9965995	+0.9964911	+ 22	+0.0222672	+0.0301812	−832	+0.0096637	+0.0130973	−371
22	0.9963084	0.9960514	38	0.0380927	0.0460007	834	0.0165297	0.0199606	380
23	0.9957202	0.9953149	54	0.0539050	0.0618051	835	0.0233899	0.0268172	388
24	0.9948356	0.9942825	70	0.0697002	0.0775897	836	0.0302424	0.0336652	397
25	0.9936557	0.9929552	87	0.0854732	0.0933503	836	0.0370854	0.0405028	405
26	+0.9921812	+0.9913338	+103	+0.1012202	+0.1090824	−836	+0.0439171	+0.0473280	−413
27	0.9904130	0.9894190	120	0.1169363	0.1247814	836	0.0507353	0.0541388	421
28	0.9883520	0.9872122	137	0.1326172	0.1404431	836	0.0575382	0.0609334	429
29	0.9859995	0.9847141	154	0.1482587	0.1560634	836	0.0643242	0.0677102	437
30	0.9833561	0.9819256	171	0.1638566	0.1716378	836	0.0710913	0.0744672	445
31	+0.9804227	+0.9788475	+189	+0.1794065	+0.1871623	−835	+0.0778377	+0.0812027	−452
32	+0.9771998	+0.9754804	+206	+0.1949045	+0.2026323	−835	+0.0845618	+0.0879147	−459

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Apr. 1	+0.9771998	+0.9754804	+ 206	+0.1949045	+0.2026323	–835	+0.0845618	+0.0879147	–459
2	0.9736891	0.9718259	224	0.2103454	0.2180433	834	0.0912612	0.0946012	466
3	0.9698911	0.9678849	242	0.2257255	0.2333916	833	0.0979345	0.1012607	473
4	0.9658073	0.9636580	260	0.2410408	0.2486725	831	0.1045797	0.1078911	480
5	0.9614376	0.9591466	278	0.2562863	0.2638816	830	0.1111948	0.1144905	487
6	+0.9567847	+0.9543518	+ 296	+0.2714577	+0.2790139	–828	+0.1177779	+0.1210567	–493
7	0.9518484	0.9492749	314	0.2865499	0.2940653	826	0.1243267	0.1275878	499
8	0.9466313	0.9439179	333	0.3015594	0.3090316	824	0.1308397	0.1340820	505
9	0.9411348	0.9382819	351	0.3164812	0.3239076	822	0.1373146	0.1405370	511
10	0.9353596	0.9323684	370	0.3313102	0.3386884	819	0.1437492	0.1469508	517
11	+0.9293085	+0.9261800	+ 388	+0.3460419	+0.3533702	–816	+0.1501417	+0.1533216	–523
12	0.9229832	0.9197185	407	0.3606726	0.3679485	813	0.1564902	0.1596473	528
13	0.9163860	0.9129858	426	0.3751973	0.3824181	809	0.1627925	0.1659256	533
14	0.9095185	0.9059846	445	0.3896106	0.3967743	805	0.1690463	0.1721546	538
15	0.9023842	0.8987177	464	0.4039087	0.4110136	801	0.1752501	0.1783328	543
16	+0.8949853	+0.8911873	+ 483	+0.4180882	+0.4251318	–796	+0.1814023	+0.1844583	–547
17	0.8873241	0.8833960	502	0.4321439	0.4391242	791	0.1875006	0.1905290	551
18	0.8794035	0.8753469	521	0.4460722	0.4529872	786	0.1935433	0.1965433	555
19	0.8712266	0.8670431	540	0.4598689	0.4667167	781	0.1995289	0.2024998	559
20	0.8627968	0.8584878	559	0.4735302	0.4803090	775	0.2054557	0.2083965	562
21	+0.8541165	+0.8496834	+ 578	+0.4870526	+0.4937602	–769	+0.2113219	+0.2142319	–566
22	0.8451888	0.8406331	598	0.5004318	0.5070671	763	0.2171262	0.2200048	569
23	0.8360167	0.8313401	617	0.5136655	0.5202264	757	0.2228673	0.2257135	572
24	0.8266036	0.8218074	636	0.5267494	0.5332343	750	0.2285433	0.2313566	574
25	0.8169519	0.8120376	655	0.5396804	0.5460872	743	0.2341531	0.2369327	577
26	+0.8070648	+0.8020340	+ 675	+0.5524546	+0.5587822	–736	+0.2396951	+0.2424403	–579
27	0.7969455	0.7917995	694	0.5650696	0.5713164	729	0.2451680	0.2478781	581
28	0.7865965	0.7813369	714	0.5775221	0.5836860	721	0.2505704	0.2532447	583
29	0.7760211	0.7706495	734	0.5898080	0.5958878	713	0.2559008	0.2585387	585
30	0.7652223	0.7597400	754	0.6019248	0.6079187	705	0.2611581	0.2637588	586
May 1	+0.7542028	+0.7486112	+ 774	+0.6138691	+0.6197756	–697	+0.2663407	+0.2689036	–587
2	0.7429656	0.7372661	795	0.6256378	0.6314553	688	0.2714472	0.2739714	588
3	0.7315134	0.7257082	815	0.6372275	0.6429540	679	0.2764761	0.2789609	589
4	0.7198505	0.7139405	835	0.6486343	0.6542681	670	0.2814258	0.2838705	589
5	0.7079787	0.7019656	855	0.6598552	0.6653955	661	0.2862950	0.2886991	589
6	+0.6959017	+0.6897874	+ 875	+0.6708881	+0.6763323	–651	+0.2910825	+0.2934449	–589
7	0.6836232	0.6774094	895	0.6817279	0.6870748	641	0.2957863	0.2981064	589
8	0.6711466	0.6648350	915	0.6923725	0.6976205	631	0.3004052	0.3026824	589
9	0.6584753	0.6520681	935	0.7028183	0.7079654	620	0.3049378	0.3071713	589
10	0.6456138	0.6391128	954	0.7130616	0.7181066	609	0.3093826	0.3115717	588
11	+0.6325657	+0.6259729	+ 974	+0.7230999	+0.7280411	–598	+0.3137383	+0.3158822	–587
12	0.6193349	0.6126523	993	0.7329299	0.7377659	586	0.3180033	0.3201014	585
13	0.6059256	0.5991554	1013	0.7425488	0.7472781	574	0.3221765	0.3242284	583
14	0.5923422	0.5854865	1032	0.7519537	0.7565753	562	0.3262569	0.3282619	581
15	0.5785889	0.5716500	1051	0.7611425	0.7656545	549	0.3302433	0.3322007	579
16	+0.5646703	+0.5576502	+1070	+0.7701115	+0.7745133	–536	+0.3341342	+0.3360438	–576
17	+0.5505905	+0.5434916	+1089	+0.7788596	+0.7831499	–522	+0.3379292	+0.3397903	–573

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
ay 17	+0.5505905	+0.5434916	+1089	+0.7788596	+0.7831499	−522	+0.3379292	+0.3397903	−573
18	0.5363543	0.5291792	1107	0.7873839	0.7915613	508	0.3416268	0.3434389	570
19	0.5219666	0.5147169	1126	0.7956819	0.7997457	494	0.3452263	0.3469890	567
20	0.5074308	0.5001090	1144	0.8037523	0.8077015	479	0.3487270	0.3504402	563
21	0.4927520	0.4853601	1162	0.8115931	0.8154267	464	0.3521283	0.3537912	559
22	+0.4779341	+0.4704745	+1180	+0.8192023	+0.8229196	−449	+0.3554290	+0.3570415	−555
23	0.4629818	0.4554565	1198	0.8265785	0.8301786	433	0.3586287	0.3601903	550
24	0.4478992	0.4403104	1216	0.8337197	0.8372015	417	0.3617264	0.3632369	545
25	0.4326906	0.4250403	1234	0.8406240	0.8439871	401	0.3647217	0.3661808	540
26	0.4173601	0.4096504	1252	0.8472905	0.8505342	385	0.3676140	0.3690214	535
27	+0.4019119	+0.3941449	+1270	+0.8537178	+0.8568410	−368	+0.3704027	+0.3717578	−530
28	0.3863500	0.3785278	1288	0.8599037	0.8629058	351	0.3730867	0.3743894	524
29	0.3706787	0.3628032	1306	0.8658470	0.8687271	334	0.3756657	0.3769155	518
30	0.3549019	0.3469754	1323	0.8715459	0.8743030	316	0.3781387	0.3793352	512
31	0.3390241	0.3310484	1340	0.8769984	0.8796321	298	0.3805050	0.3816480	506
ne 1	+0.3230490	+0.3150266	+1357	+0.8822039	+0.8847134	−280	+0.3827641	+0.3838533	−499
2	0.3069815	0.2989142	1374	0.8871605	0.8895449	261	0.3849154	0.3859502	492
3	0.2908254	0.2827155	1390	0.8918664	0.8941250	242	0.3869577	0.3879379	485
4	0.2745852	0.2664354	1406	0.8963204	0.8984524	223	0.3888907	0.3898160	478
5	0.2582662	0.2500778	1421	0.9005206	0.9025251	203	0.3907137	0.3915836	471
6	+0.2418714	+0.2336480	+1436	+0.9044657	+0.9063422	−183	+0.3924258	+0.3932401	−464
7	0.2254079	0.2171511	1451	0.9081545	0.9099024	163	0.3940265	0.3947850	456
8	0.2088787	0.2005914	1465	0.9115857	0.9132041	142	0.3955154	0.3962176	448
9	0.1922898	0.1839743	1479	0.9147578	0.9162468	121	0.3968916	0.3975375	440
10	0.1756455	0.1673040	1493	0.9176708	0.9190293	100	0.3981552	0.3987445	431
11	+0.1589508	+0.1505867	+1506	+0.9203224	+0.9215502	− 78	+0.3993054	+0.3998379	−422
12	0.1422121	0.1338272	1519	0.9227127	0.9238098	56	0.4003420	0.4008177	413
13	0.1254329	0.1170298	1532	0.9248414	0.9258072	34	0.4012650	0.4016837	403
14	0.1086187	0.1002005	1544	0.9267075	0.9275424	− 11	0.4020739	0.4024358	393
15	0.0917755	0.0833441	1556	0.9283115	0.9290146	+ 12	0.4027691	0.4030738	383
16	+0.0749072	+0.0664654	+1568	+0.9296520	+0.9302236	+ 35	+0.4033499	+0.4035975	−373
17	0.0580193	0.0495694	1579	0.9307296	0.9311702	59	0.4038167	0.4040075	363
18	0.0411164	0.0326610	1590	0.9315450	0.9318539	83	0.4041698	0.4043034	353
19	0.0242037	+0.0157452	1601	0.9320970	0.9322746	107	0.4044086	0.4044854	342
20	+0.0072859	−0.0011736	1612	0.9323866	0.9324332	132	0.4045339	0.4045540	331
21	−0.0096328	−0.0180909	+1622	+0.9324144	+0.9323300	+157	+0.4045457	+0.4045090	−320
22	0.0265474	0.0350018	1631	0.9321802	0.9319648	182	0.4044439	0.4043505	309
23	0.0434535	0.0519020	1640	0.9316840	0.9313381	207	0.4042287	0.4040787	298
24	0.0603468	0.0687871	1648	0.9309271	0.9304511	232	0.4039004	0.4036941	287
25	0.0772225	0.0856525	1656	0.9299099	0.9293033	258	0.4034595	0.4031965	275
26	−0.0940767	−0.1024946	+1663	+0.9286315	+0.9278947	+284	+0.4029053	+0.4025859	−263
27	0.1109053	0.1193082	1669	0.9270929	0.9262263	310	0.4022383	0.4018626	251
28	0.1277031	0.1360891	1674	0.9252949	0.9242988	336	0.4014589	0.4010271	239
29	0.1444658	0.1528329	1679	0.9232378	0.9221118	362	0.4005671	0.4000789	227
30	0.1611896	0.1695352	1683	0.9209210	0.9196657	388	0.3995626	0.3990183	215
31	−0.1778691	−0.1861909	+1687	+0.9183458	+0.9169614	+415	+0.3984460	+0.3978457	−202
32	−0.1945000	−0.2027958	+1690	+0.9155124	+0.9139990	+442	+0.3972173	+0.3965609	−190

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
July 1	−0.1778691	−0.1861909	+1687	+0.9183458	+0.9169614	+ 415	+0.3984460	+0.3978457	−202
2	0.1945000	0.2027958	1690	0.9155124	0.9139990	442	0.3972173	0.3965609	190
3	0.2110778	0.2193455	1692	0.9124211	0.9107788	469	0.3958766	0.3951643	177
4	0.2275981	0.2358351	1695	0.9090722	0.9073016	496	0.3944240	0.3936559	164
5	0.2440557	0.2522594	1697	0.9054669	0.9035683	523	0.3928600	0.3920363	151
6	−0.2604455	−0.2686135	+1699	+0.9016058	+0.8995795	+ 550	+0.3911849	+0.3903058	−138
7	0.2767627	0.2848926	1700	0.8974896	0.8953364	578	0.3893990	0.3884646	124
8	0.2930024	0.3010915	1701	0.8931197	0.8908395	605	0.3875027	0.3865132	110
9	0.3091596	0.3172064	1701	0.8884961	0.8860900	633	0.3854963	0.3844521	96
10	0.3252308	0.3332316	1700	0.8836212	0.8810898	661	0.3833806	0.3822820	82
11	−0.3412086	−0.3491615	+1699	+0.8784960	+0.8758399	+ 689	+0.3811564	+0.3800037	− 68
12	0.3570896	0.3649922	1697	0.8731218	0.8703420	717	0.3788241	0.3776177	54
13	0.3728690	0.3807195	1694	0.8675007	0.8645985	745	0.3763846	0.3751252	40
14	0.3885428	0.3963375	1691	0.8616351	0.8586103	773	0.3738389	0.3725261	26
15	0.4041039	0.4118420	1687	0.8555248	0.8523793	801	0.3711871	0.3698221	− 11
16	−0.4195507	−0.4272292	+1682	+0.8491739	+0.8459087	+ 829	+0.3684311	+0.3670142	+ 3
17	0.4348771	0.4424943	1677	0.8425837	0.8391994	857	0.3655715	0.3641029	18
18	0.4500799	0.4576331	1671	0.8357561	0.8322542	885	0.3626088	0.3610893	32
19	0.4651537	0.4726414	1664	0.8286938	0.8250754	913	0.3595446	0.3579747	47
20	0.4800956	0.4875159	1656	0.8213990	0.8176647	941	0.3563796	0.3547595	61
21	−0.4949016	−0.5022521	+1648	+0.8138731	+0.8100248	+ 969	+0.3531145	+0.3514450	+ 76
22	0.5095670	0.5168458	1639	0.8061197	0.8021579	997	0.3497509	0.3480322	91
23	0.5240883	0.5312941	1630	0.7981397	0.7940655	1024	0.3462891	0.3445217	106
24	0.5384625	0.5455928	1620	0.7899355	0.7857501	1052	0.3427301	0.3409145	121
25	0.5526846	0.5597377	1610	0.7815096	0.7772142	1079	0.3390750	0.3372117	136
26	−0.5667516	−0.5737259	+1599	+0.7728642	+0.7684596	+1107	+0.3353248	+0.3334142	+151
27	0.5806600	0.5875532	1587	0.7640010	0.7594889	1134	0.3314802	0.3295228	167
28	0.5944053	0.6012158	1575	0.7549232	0.7503037	1162	0.3275422	0.3255384	182
29	0.6079841	0.6147096	1563	0.7456312	0.7409064	1189	0.3235114	0.3214617	198
30	0.6213920	0.6280314	1550	0.7361293	0.7312997	1216	0.3193893	0.3172941	213
31	−0.6346268	−0.6411772	+1536	+0.7264182	+0.7214852	+1243	+0.3151763	+0.3130364	+229
Aug. 1	0.6476825	0.6541422	1521	0.7165010	0.7114659	1270	0.3108739	0.3086894	245
2	0.6605559	0.6669232	1506	0.7063801	0.7012440	1297	0.3064829	0.3042545	260
3	0.6732435	0.6795163	1490	0.6960578	0.6908218	1323	0.3020044	0.2997326	276
4	0.6857410	0.6919168	1474	0.6855365	0.6802025	1349	0.2974393	0.2951249	291
5	−0.6980435	−0.7041210	+1457	+0.6748199	+0.6693888	+1375	+0.2927894	+0.2904327	+306
6	0.7101485	0.7161254	1439	0.6639098	0.6583836	1400	0.2880552	0.2856572	321
7	0.7220512	0.7279256	1420	0.6528103	0.6471903	1425	0.2832389	0.2808002	336
8	0.7337480	0.7395181	1401	0.6415240	0.6358118	1450	0.2783415	0.2758628	351
9	0.7452353	0.7508990	1381	0.6300542	0.6242515	1475	0.2733644	0.2708464	366
10	−0.7565090	−0.7620649	+1360	+0.6184042	+0.6125128	+1499	+0.2683091	+0.2657527	+381
11	0.7675663	0.7730126	1339	0.6065778	0.6005994	1523	0.2631774	0.2605833	396
12	0.7784034	0.7837385	1317	0.5945783	0.5885150	1546	0.2579706	0.2553396	411
13	0.7890173	0.7942395	1295	0.5824099	0.5762632	1569	0.2526905	0.2500234	426
14	0.7994047	0.8045128	1272	0.5700756	0.5638477	1591	0.2473387	0.2446365	441
15	−0.8095633	−0.8145554	+1248	+0.5575798	+0.5512721	+1613	+0.2419170	+0.2391803	+456
16	−0.8194892	−0.8243646	+1224	+0.5449254	+0.5385402	+1635	+0.2364266	+0.2336562	+470

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
ug. 16	−0.8194892	−0.8243646	+1224	+0.5449254	+0.5385402	+1635	+0.2364266	+0.2336562	+470
17	0.8291809	0.8339375	1199	0.5321170	0.5256560	1657	0.2308694	0.2280664	485
18	0.8386344	0.8432717	1173	0.5191579	0.5126232	1678	0.2252473	0 2224122	499
19	0.8478488	0.8523653	1147	0.5060522	0.4994450	1699	0.2195614	0.2166950	514
20	0.8568208	0.8612150	1120	0.4928025	0.4861255	1719	0.2138133	0.2109166	528
21	−0.8655478	−0.8698193	+1092	+0.4794141	+0.4726682	+1738	+0.2080050	+0.2050785	+542
22	0.8740288	0.8781755	1063	0.4658888	0.4590767	1757	0.2021375	0.1991823	556
23	0.8822596	0.8862812	1034	0.4522319	0.4453543	1775	0.1962129	0.1932292	570
24	0.8902396	0.8941342	1004	0.4384450	0.4315048	1793	0.1902318	0.1872210	584
25	0.8979650	0.9017320	974	0.4245338	0.4175321	1811	0.1841968	0.1811593	598
26	−0.9054348	−0.9090731	+ 944	+0.4105006	+0.4034394	+1828	+0.1781087	+0.1750453	+611
27	0.9126465	0.9161545	913	0.3963492	0.3892307	1845	0.1719692	0 1688808	625
28	0.9195969	0.9229735	882	0.3820842	0.3749098	1862	0.1657802	0.1626675	638
29	0.9262840	0.9295284	851	0.3677082	0.3604797	1878	0.1595429	0.1564068	651
30	0.9327061	0.9358166	820	0.3532250	0.3459448	1894	0.1532592	0.1501004	664
31	−0.9388598	−0.9418358	+ 789	+0.3386393	+0.3313089	+1909	+0.1469306	+0.1437500	+677
pt. 1	0.9447439	0.9475836	758	0.3239543	0.3165762	1923	0.1405589	0.1373575	690
2	0.9503549	0.9530580	727	0.3091750	0.3017508	1937	0.1341460	0.1309246	703
3	0.9556922	0.9582570	695	0.2943045	0.2868367	1950	0.1276936	0.1244531	715
4	0.9607522	0.9631776	662	0.2793478	0.2718385	1963	0.1212035	0.1179450	727
5	−0.9655331	−0.9678187	+ 629	+0.2643092	+0.2567606	+1975	+0.1146779	+0.1114025	+739
6	0.9700341	0.9721788	595	0.2491932	0.2416075	1987	0.1081189	0.1048273	751
7	0.9742527	0.9762556	560	0.2340041	0.2263837	1998	0.1015280	0.0982214	762
8	0.9781873	0.9800477	525	0.2187468	0.2110942	2008	0.0949076	0.0915871	774
9	0.9818366	0.9835538	489	0.2034262	0.1957434	2018	0.0882599	0.0849263	785
10	−0.9851993	−0.9867729	+ 453	+0.1880465	+0.1803365	+2027	+0.0815866	+0.0782412	+796
11	0.9882745	0.9897042	417	0.1726135	0.1648774	2036	0.0748903	0.0715338	807
12	0.9910616	0.9923463	380	0.1571297	0.1493712	2044	0.0681723	0.0648061	818
13	0.9935586	0.9946987	343	0.1416022	0.1338232	2051	0.0614354	0.0580604	828
14	0.9957663	0.9967612	306	0 1260349	0.1182378	2058	0.0546813	0.0512985	838
15	−0.9976833	−0.9985328	+ 268	+0.1104324	+0.1026194	+2065	+0.0479122	+0.0445225	+848
16	0.9993095	1.0000133	231	0.0947993	0.0869725	2071	0.0411298	0.0377343	858
17	1.0006442	1.0012023	193	0.0791396	0.0713011	2076	0.0343362	0.0309356	867
18	1.0016876	1.0021000	155	0.0634578	0.0556103	2080	0.0275328	0.0241284	876
19	1.0024395	1.0027059	117	0.0477591	0.0399044	2084	0.0207223	0.0173147	885
20	−1.0028993	−1.0030195	+ 79	+0.0320470	+0.0241877	+2087	+0.0139059	+0.0104963	+894
21	1.0030667	1.0030410	40	0.0163267	+0.0084645	2090	0.0070859	+0.0036750	902
22	1.0029423	1.0027702	+ 1	+0.0006016	−0.0072614	2091	+0.0002638	−0.0031474	910
23	1.0025249	1.0022066	− 38	−0.0151240	0.0229854	2092	−0.0065586	0.0099694	918
24	1.0018152	1.0013503	77	0.0308454	0.0387036	2092	0.0133796	0.0167890	925
25	−1.0008122	−1.0002010	− 116	-0.0465590	−0.0544104	+2092	−0.0201972	−0.0236039	+932
26	0.9995164	0.9987584	155	0.0622586	0.0701026	2091	0.0270089	0.0304122	939
27	0.9979270	0.9970224	195	0.0779418	0.0857754	2090	0.0338135	0.0372125	945
28	0.9960444	0.9949932	235	0.0936030	0.1014240	2088	0.0406088	0.0440024	951
29	0.9938686	0.9926706	275	0.1092379	0.1170445	2085	0.0473929	0.0507803	957
30	−0.9913991	−0.9900542	− 315	0.1248429	−0.1326321	+2082	−0.0541641	−0.0575440	+963
31	−0.9886361	−0.9871449	− 355	−0.1404118	−0.1481815	+2079	−0.0609197	−0.0642911	+968

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Oct. 1	−0.9886361	−0.9871449	− 355	−0.1404118	−0.1481815	+2079	−0.0609197	−0.0642911	+ 968
2	0.9855805	0.9839428	395	0.1559406	0.1636884	2075	0.0676578	0.0710197	973
3	0.9822320	0.9804480	436	0.1714242	0.1791476	2070	0.0743765	0.0777279	978
4	0.9785911	0.9766615	476	0.1868578	0.1945543	2065	0.0810735	0.0844131	982
5	0.9746591	0.9725837	516	0.2022365	0.2099039	2059	0.0877464	0.0910734	986
6	−0.9704358	−0.9682157	− 556	−0.2175556	−0.2251908	+2052	−0.0943936	−0.0977065	+ 990
7	0.9659233	0.9635587	597	0.2328093	0.2404106	2045	0.1010121	0.1043102	993
8	0.9611222	0.9586138	637	0.2479940	0.2555589	2037	0.1076006	0.1108829	996
9	0.9560339	0.9533826	677	0.2631046	0.2706302	2028	0.1141568	0.1174219	999
10	0.9506602	0.9478667	717	0.2781353	0.2856195	2019	0.1206781	0.1239252	1001
11	−0.9450024	−0.9420674	− 758	−0.2930822	−0.3005226	+2009	−0.1271630	−0.1303910	+1003
12	0.9390621	0.9359869	799	0.3079402	0.3153344	1998	0.1336091	0.1368170	1005
13	0.9328420	0.9296274	839	0.3227046	0.3300505	1987	0.1400145	0.1432014	1006
14	0.9263434	0.9229903	879	0.3373714	0.3446667	1975	0.1463775	0.1495424	1007
15	0.9195685	0.9160782	919	0.3519360	0.3591787	1963	0.1526959	0.1558380	1008
16	−0.9125196	−0.9088931	− 959	−0.3663943	−0.3735826	+1950	−0.1589683	−0.1620867	+1008
17	0.9051988	0.9014370	998	0.3807426	0.3878735	1936	0.1651928	0.1682864	1008
18	0.8976080	0.8937120	1038	0.3949752	0.4020473	1921	0.1713673	0.1744353	1008
19	0.8897494	0.8857204	1077	0.4090892	0.4161004	1906	0.1774903	0.1805321	1007
20	0.8816254	0.8774648	1117	0.4230803	0.4300284	1890	0.1835603	0.1865747	1006
21	−0.8732386	−0.8689468	−1156	−0.4369444	−0.4438279	+1874	−0.1895751	−0.1925615	+1004
22	0.8645900	0.8601689	1195	0.4506782	0.4574945	1857	0.1955336	0.1984909	1002
23	0.8556833	0.8511333	1234	0.4642766	0.4710244	1840	0.2014335	0.2043612	1000
24	0.8465194	0.8418421	1274	0.4777371	0.4844139	1823	0.2072737	0.2101707	998
25	0.8371015	0.8322977	1313	0.4910544	0.4976581	1805	0.2130519	0.2159172	995
26	−0.8274310	−0.8225018	−1352	−0.5042246	−0.5107536	+1787	−0.2187664	−0.2215994	+ 992
27	0.8175106	0.8124578	1391	0.5172444	0.5236964	1769	0.2244159	0.2272155	989
28	0.8073434	0.8021676	1430	0.5301092	0.5364824	1750	0.2299981	0.2327636	985
29	0.7969309	0.7916337	1469	0.5428154	0.5491073	1730	0.2355116	0.2382418	981
30	0.7862762	0.7808588	1507	0.5553579	0.5615671	1709	0.2409540	0.2436483	977
31	−0.7753818	−0.7698458	−1545	−0.5677339	−0.5738575	+1688	−0.2463242	−0.2489814	+ 972
Nov. 1	0.7642511	0.7585979	1582	0.5799376	0.5859740	1666	0.2516197	0.2542389	967
2	0.7528867	0.7471182	1619	0.5919660	0.5979131	1643	0.2568389	0.2594194	961
3	0.7412925	0.7354100	1656	0.6038148	0.6096706	1619	0.2619802	0.2645210	955
4	0.7294712	0.7234767	1692	0.6154800	0.6212424	1595	0.2670415	0.2695417	948
5	−0.7174268	−0.7113218	−1728	−0.6269573	−0.6326241	+1570	−0.2720212	−0.2744799	+ 941
6	0.7051626	0.6989499	1764	0.6382425	0.6438120	1545	0.2769175	0.2793338	934
7	0.6926838	0.6863642	1800	0.6493322	0.6548028	1519	0.2817287	0.2841021	926
8	0.6799922	0.6735685	1835	0.6602231	0.6655926	1493	0.2864536	0.2887829	918
9	0.6670935	0.6605676	1870	0.6709110	0.6761779	1466	0.2910900	0.2933750	910
10	−0.6539914	−0.6473657	−1905	−0.6813930	−0.6865558	+1439	−0.2956374	−0.2978770	+ 901
11	0.6406907	0.6339669	1940	0.6916658	0.6967224	1411	0.3000936	0.3022871	892
12	0.6271948	0.6203751	1974	0.7017254	0.7066746	1383	0.3044574	0.3066043	883
13	0.6135082	0.6065948	2008	0.7115696	0.7164100	1354	0.3087277	0.3108274	873
14	0.5996353	0.5926304	2041	0.7211955	0.7259257	1324	0.3129033	0.3149552	863
15	−0.5855805	−0.5784864	−2074	−0.7306002	−0.7352186	+1294	−0.3169830	−0.3189866	+ 853
16	−0.5713483	−0.5641667	−2107	−0.7397807	−0.7442863	+1263	−0.3209657	−0.3229203	+ 842

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
ov. 16	−0.5713483	−0.5641667	−2107	−0.7397807	−0.7442863	+1263	−0.3209657	−0.3229203	+ 842
17	0.5569422	0.5496754	2139	0.7487348	0.7531258	1231	0.3248501	0.3267551	831
18	0.5423668	0.5350168	2170	0.7574592	0.7617351	1199	0.3286351	0.3304901	819
19	0.5276260	0.5201950	2201	0.7659527	0.7701114	1166	0.3323199	0.3341242	807
20	0.5127244	0.5052145	2231	0.7742113	0.7782521	1133	0.3359031	0.3376564	795
21	−0.4976660	−0.4900798	−2261	−0.7822335	−0.7861550	+1099	−0.3393839	−0.3410855	+ 783
22	0.4824559	0.4747942	2290	0.7900164	0.7938176	1065	0.3427610	0.3444104	770
23	0.4670959	0.4593621	2319	0.7975581	0.8012374	1030	0.3460335	0.3476300	757
24	0.4515929	0.4437882	2348	0.8048554	0.8084120	995	0.3492000	0.3507434	743
25	0.4359492	0.4280768	2377	0.8119067	0.8153388	959	0.3522599	0.3537493	729
26	−0.4201712	−0.4122324	−2405	−0.8187082	−0.8220149	+ 923	−0.3552115	−0.3566464	+ 715
27	0.4042615	0.3962594	2432	0.8252584	0.8284385	887	0.3580540	0.3594340	701
28	0.3882264	0.3801630	2459	0.8315548	0.8346070	850	0.3607864	0.3621109	686
29	0.3720697	0.3639471	2485	0.8375948	0.8405179	813	0.3634074	0.3646758	671
30	0.3557959	0.3476166	2510	0.8433761	0.8461694	775	0.3659161	0.3671282	656
ec. 1	−0.3394101	−0.3311774	−2535	−0.8488973	−0.8515591	+ 736	−0.3683118	−0.3694667	+ 640
2	0.3229188	0.3146350	2559	0.8541548	0.8566844	697	0.3705929	0.3716904	624
3	0.3063265	0.2979938	2582	0.8591475	0.8615438	657	0.3727590	0.3737986	608
4	0.2896378	0.2812594	2604	0.8638733	0.8661358	617	0.3748091	0.3757906	592
5	0.2728591	0.2644376	2625	0.8683310	0.8704582	576	0.3767429	0.3776655	575
6	−0.2559957	−0.2475340	−2646	−0.8725176	−0.8745094	+ 535	−0.3785587	−0.3794226	+ 558
7	0.2390531	0.2305538	2666	0.8764330	0.8782881	493	0.3802569	0.3810615	541
8	0.2220369	0.2135030	2685	0.8800748	0.8817932	451	0.3818364	0.3825816	524
9	0.2049528	0.1963867	2704	0.8834431	0.8850241	408	0.3832970	0.3839827	506
10	0.1878057	0.1792106	2722	0.8865364	0.8879798	365	0.3846385	0.3852642	488
11	−0.1706019	−0.1619803	−2740	−0.8893540	−0.8906588	+ 322	−0.3858600	−0.3864258	+ 470
12	0.1533466	0.1447018	2757	0.8918944	0.8930611	278	0.3869617	0.3874676	451
13	0.1360461	0.1273800	2773	0.8941584	0.8951861	234	0.3879434	0.3883890	432
14	0.1187044	0.1100200	2789	0.8961443	0.8970332	190	0.3888046	0.3891901	412
15	0.1013275	0.0926274	2804	0.8978526	0.8986024	145	0.3893455	0.3898707	393
16	−0.0839205	−0.0752073	−2818	−0.8992825	−0.8998930	+ 100	−0.3901658	−0.3904307	+ 373
17	0.0664885	0.0577648	2831	0.9004340	0.9009056	55	0.3906654	0.3908701	353
18	0.0490369	0.0403054	2844	0.9013075	0.9016393	+ 9	0.3910446	0.3911887	333
19	0.0315707	0.0228334	2855	0.9019013	0.9020936	− 37	0.3913026	0.3913862	313
20	−0.0140943	−0.0053545	2865	0.9022162	0.9022693	83	0.3914395	0.3914629	292
21	+0.0033859	+0.0121266	−2875	−0.9022526	−0.9021657	− 129	−0.3914559	−0.3914186	+ 272
22	0.0208665	0.0296048	2884	0.9020090	0.9017826	176	0.3913510	0.3912530	251
23	0.0383409	0.0470743	2892	0.9014865	0.9011204	223	0.3911248	0.3909563	230
24	0.0558044	0.0645306	2899	0.9006845	0.9001736	271	0.3907775	0.3905583	209
25	0.0732522	0.0819686	2905	0.8996028	0.8989570	318	0.3903087	0.3900289	188
26	+0.0906790	+0.0993828	−2910	−0.8982414	−0.8974559	− 366	−0.3897187	−0.3893782	+ 166
27	0.1080792	0.1167675	2914	0.8966007	0.8956758	413	0.3890073	0.3886062	145
28	0.1254471	0.1341177	2918	0.8946811	0.8936164	461	0.3881749	0.3877131	123
29	0.1427782	0.1514276	2921	0.8924820	0.8912779	509	0.3872210	0.3866987	101
30	0.1600654	0.1686913	2923	0.8900043	0.8886611	558	0.3861461	0.3855633	79
31	+0.1773043	+0.1859037	−2922	−0.8872485	−0.8857664	− 608	−0.3849503	−0.3843072	+ 56
32	+0.1944887	+0.2030586	−2921	−0.8842151	−0.8825947	− 658	−0.3836339	−0.3829307	+ 33

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		Day of Month.	FEBRUARY.		Day of Month.	MARCH.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Lati
	° ′ ″	° ′ ″		° ′ ″	° ′ ″		° ′ ″	°
1.0	109 5 30.1	+3 39 49.4	1.0	161 35 17.8	−0 43 25.0	1.0	185 8 25.3	−2 4
1.5	116 12 55.6	3 11 42.5	1.5	169 0 12.3	1 23 30.6	1.5	192 40 34.7	3 2
2.0	123 22 36.4	2 40 22.9	2.0	176 23 14.3	2 2 2.9	2.0	200 9 24.5	3 5
2.5	130 33 50.8	2 6 20.9	2.5	183 43 39.3	2 38 20.6	2.5	207 33 58.8	4 1
3.0	137 45 57.9	1 30 10.8	3.0	191 0 49.6	3 11 48.0	3.0	214 53 31.5	4 3
3.5	144 58 19.4	+0 52 30.2	3.5	198 14 14.9	−3 41 54.1	3.5	222 7 25.8	−4 5
4.0	152 10 21.4	+0 13 58.3	4.0	205 23 32.1	4 8 13.9	4.0	229 15 15.8	5
4.5	159 21 34.3	−0 24 45.1	4.5	212 28 24.5	4 30 29.1	4.5	236 16 45.7	5 1
5.0	166 31 33.2	1 3 0.1	5.0	219 28 42.2	4 48 26.5	5.0	243 11 49.2	5 1
5.5	173 39 58.0	1 40 8.6	5.5	226 24 20.7	5 1 58.7	5.5	250 0 28.6	5 1
6.0	180 46 33.2	−2 15 35.0	6.0	233 15 20.2	−5 11 2.6	6.0	256 42 53.2	−5
6.5	187 51 7.4	2 48 46.7	6.5	240 1 44.7	5 15 39.6	6.5	263 19 18.1	4 5
7.0	194 53 32.1	3 19 14.1	7.0	246 43 41.1	5 15 54.8	7.0	269 50 3.0	4 4
7.5	201 53 40.9	3 46 31.9	7.5	253 21 18.3	5 11 56.2	7.5	276 15 31.1	4 2
8.0	208 51 29.5	4 10 18.4	8.0	259 54 46.8	5 3 54.6	8.0	282 36 7.6	4
8.5	215 46 54.1	−4 30 16.2	8.5	266 24 18.1	−4 52 3.1	8.5	288 52 19.2	−3 4
9.0	222 39 50.7	4 46 11.5	9.0	272 50 3.9	4 36 37.0	9.0	295 4 33.1	3 1
9.5	229 30 15.2	4 57 55.1	9.5	279 12 15.9	4 17 52.7	9.5	301 13 15.9	2 5
10.0	236 18 2.9	5 5 21.8	10.0	285 31 5.9	3 56 8.7	10.0	307 18 54.0	2 2
10.5	243 3 7.6	5 8 30.0	10.5	291 46 45.4	3 31 44.4	10.5	313 21 52.4	1 5
11.0	249 45 22.4	−5 7 22.2	11.0	297 59 25.5	−3 5 0.1	11.0	319 22 34.9	−1 1
11.5	256 24 40.1	5 2 4.5	11.5	304 9 17.4	2 36 17.1	11.5	325 21 23.9	0 4
12.0	263 0 53.1	4 52 46.5	12.0	310 16 31.9	2 5 56.9	12.0	331 18 40.0	−0 1
12.5	269 33 53.2	4 39 40.9	12.5	316 21 20.1	1 34 21.6	12.5	337 14 42.7	+0 1
13.0	276 3 33.4	4 23 3.4	13.0	322 23 54.0	1 1 53.1	13.0	343 9 50.0	0 5
13.5	282 29 48.1	−4 3 11.8	13.5	328 24 25.6	−0 28 53.2	13.5	349 4 18.8	+1 2
14.0	288 52 32.9	3 40 26.2	14.0	334 23 8.2	+0 4 16.7	14.0	354 58 25.3	1 5
14.5	295 11 46.0	3 15 8.0	14.5	340 20 16.2	0 37 15.6	14.5	0 52 24.9	2 2
15.0	301 27 28.3	2 47 39.6	15.0	346 16 5.4	1 9 43.5	15.0	6 46 32.7	2 5
15.5	307 39 43.5	2 18 23.9	15.5	352 10 53.1	1 41 20.9	15.5	12 41 3.9	3 1
16.0	313 48 39.1	−1 47 44.2	16.0	358 4 58.3	+2 11 49.6	16.0	18 36 13.6	+3 4
16.5	319 54 25.8	1 16 3.1	16.5	3 58 41.9	2 40 52.0	16.5	24 32 18.0	4
17.0	325 57 17.9	0 43 43.0	17.0	9 52 26.7	3 8 11.6	17.0	30 29 33.7	4 2
17.5	331 57 33.2	−0 11 5.1	17.5	15 46 37.3	3 33 32.8	17.5	36 28 18.9	4 3
18.0	337 55 32.8	+0 21 30.0	18.0	21 41 40.5	3 56 40.6	18.0	42 28 52.5	4 5
18.5	343 51 41.1	+0 53 43.0	18.5	27 38 4.6	+4 17 21.0	18.5	48 31 35.5	+5
19.0	349 46 25.6	1 25 15.2	19.0	33 36 19.8	4 35 20.4	19.0	54 36 49.8	5 1
19.5	355 40 16.4	1 55 49.2	19.5	39 36 57.7	4 50 26.1	19.5	60 44 59.3	5 1
20.0	1 33 46.3	2 25 8.4	20.0	45 40 30.7	5 2 25.6	20.0	66 56 28.6	5 1
20.5	7 27 29.7	2 52 56.8	20.5	51 47 32.4	5 11 7.0	20.5	73 11 43.8	5
21.0	13 22 3.1	+3 18 58.6	21.0	57 58 35.8	+5 16 19.0	21.0	79 31 11.4	+5
21.5	19 18 4.4	3 42 58.9	21.5	64 14 13.9	5 17 51.2	21.5	85 55 18.1	4 4
22.0	25 16 11.9	4 4 42.9	22.0	70 34 58.2	5 15 33.7	22.0	92 24 30.0	4 3
22.5	31 17 4.3	4 23 55.5	22.5	77 1 18.1	5 9 18.3	22.5	98 59 11.8	4 1
23.0	37 21 19.8	4 40 21.9	23.0	83 33 39.7	4 58 58.6	23.0	105 39 45.6	3 5
23.5	43 29 35.5	+4 53 47.4	23.5	90 12 25.0	+4 44 30.4	23.5	112 26 30.5	+3 2
24.0	49 42 26.6	5 3 57.1	24.0	96 57 50.4	4 25 52.8	24.0	119 19 40.3	2 5
24.5	56 0 25.4	5 10 36.8	24.5	103 50 5.6	4 3 9.0	24.5	126 19 22.8	2 2
25.0	62 24 0.5	5 13 32.7	25.0	110 49 12.1	3 36 27.1	25.0	133 25 37.8	1 4
25.5	68 53 35.7	5 12 32.0	25.5	117 55 2.6	3 6 1.0	25.5	140 38 16.1	1
26.0	75 29 28.7	+5 7 24.1	26.0	125 7 19.6	+2 32 11.3	26.0	147 56 58.6	+0 2
26.5	82 11 50.1	4 58 0.9	26.5	132 25 34.8	1 55 24.9	26.5	155 21 14.4	−0 1
27.0	89 0 42.9	4 44 17.3	27.0	139 49 9.7	1 16 15.9	27.0	162 50 21.5	0 5
27.5	95 56 1.0	4 26 12.9	27.5	147 17 15.6	+0 35 25.3	27.5	170 23 26.9	1 3
28.0	102 57 29.1	4 3 52.6	28.0	154 48 55.0	−0 6 21.6	28.0	177 59 27.2	2 1
28.5	110 4 42.9	3 37 27.5	28.5	162 23 2.8	0 48 14.8	28.5	185 37 10.7	2 4
29.0	117 17 8.5	+3 7 15.3	29.0	169 58 28.8	−1 29 23.3	29.0	193 15 20.4	−3
29.5	124 34 4.0	2 33 40.6	29.5	177 34 0.3	2 8 56.5	29.5	200 52 36.3	3
30.0	131 54 40.7	1 57 15.0	30.0	185 8 25.3	2 46 6.1	30.0	208 27 39.7	4
30.5	139 18 4.4	1 18 35.8	30.5	192 40 34.7	3 20 10.1	30.5	215 59 15.5	4
31.0	146 43 17.5	+0 38 25.3	31.0	200 9 24.5	3 50 31.8	31.0	223 26 16.8	4
31.5	154 9 21.2	−0 2 30.6	31.5	207 33 58.8	−4 16 42.5	31.5	230 47 45.6	−5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		Day of Month.	MAY.		Day of Month.	JUNE.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
	° ′ ″	° ′ ″		° ′ ″	° ′ ″		° ′ ″	° ′ ″
1.0	238 2 55.9	−5 9 32.2	1.0	274 16 37.0	−4 13 1.0	1.0	320 58 20.0	−0 35 37.9
1.5	245 11 14.6	5 10 25.8	1.5	280 58 53.7	3 51 46.0	1.5	327 6 9.1	−0 3 9.7
2.0	252 12 20.7	5 6 37.2	2.0	287 34 4.8	3 27 45.6	2.0	333 10 5.3	+0 29 1.0
2.5	259 6 5.4	4 58 23.7	2.5	294 2 30.4	3 1 27.0	2.5	339 10 48.0	1 0 35.7
3.0	265 52 30.9	4 46 6.7	3.0	300 24 37.8	2 33 16.1	3.0	345 8 57.4	1 31 17.2
3.5	272 31 49.1	−4 30 8.8	3.5	306 40 59.1	−2 3 37.7	3.5	351 5 14.3	+2 0 49.2
4.0	279 4 19.3	4 10 53.6	4.0	312 52 10.7	1 32 55.1	4.0	357 0 19.4	2 28 56.4
4.5	285 30 27.4	3 48 45.2	4.5	318 58 51.5	1 1 30.0	4.5	2 54 51.8	2 55 24.3
5.0	291 50 43.9	3 24 7.1	5.0	325 1 41.9	−0 29 43.0	5.0	8 49 29.6	3 19 58.5
5.5	298 5 42.7	2 57 22.1	5.5	331 1 22.7	+0 2 6.8	5.5	14 44 49.0	3 42 25.4
6.0	304 15 59.2	−2 28 52.4	6.0	336 58 34.5	+0 33 41.1	6.0	20 41 23.1	+4 2 31.3
6.5	310 22 10.4	1 58 59.4	6.5	342 53 56.8	1 4 42.4	6.5	26 39 42.9	4 20 3.1
7.0	316 24 52.7	1 28 3.7	7.0	348 48 7.6	1 34 53.9	7.0	32 40 15.6	4 34 48.1
7.5	322 24 42.0	0 56 25.3	7.5	354 41 42.6	2 3 59.4	7.5	38 43 25.0	4 46 34.0
8.0	328 22 12.9	−0 24 23.3	8.0	0 35 15.2	2 31 42.9	8.0	44 49 31.2	4 55 9.3
8.5	334 17 58.3	+0 7 43.5	8.5	6 29 16.0	+2 57 48.5	8.5	50 58 49.7	+5 0 23.6
9.0	340 12 29.0	0 39 36.5	9.0	12 24 12.5	3 22 1.0	9.0	57 11 32.0	5 2 8.0
9.5	346 6 13.2	1 10 57.2	9.5	18 20 29.1	3 44 5.2	9.5	63 27 45.9	5 0 15.3
10.0	351 59 36.6	1 41 27.8	10.0	24 18 26.5	4 3 46.4	10.0	69 47 35.2	4 54 40.4
10.5	357 53 2.8	2 10 51.0	10.5	30 18 22.6	4 20 50.6	10.5	76 10 59.7	4 45 21.1
11.0	3 46 52.4	+2 38 49.1	11.0	36 20 31.6	+4 35 4.6	11.0	82 37 56.0	+4 32 18.2
11.5	9 41 23.8	3 5 5.5	11.5	42 25 4.9	4 46 15.9	11.5	89 8 18.1	4 15 35.5
12.0	15 36 53.2	3 29 23.6	12.0	48 32 10.9	4 54 13.7	12.0	95 41 58.0	3 55 20.7
12.5	21 33 35.0	3 51 27.8	12.5	54 41 55.5	4 58 48.6	12.5	102 18 46.3	3 31 45.1
13.0	27 31 41.5	4 11 3.2	13.0	60 54 22.6	4 59 53.4	13.0	108 58 32.9	3 5 3.7
13.5	33 31 24.1	+4 27 56.0	13.5	67 9 34.6	+4 57 22.4	13.5	115 41 7.8	+2 35 35.3
14.0	39 32 52.8	4 41 53.6	14.0	73 27 32.7	4 51 12.9	14.0	122 26 21.7	2 3 41.8
14.5	45 36 17.6	4 52 44.6	14.5	79 48 17.6	4 41 24.6	14.5	129 14 6.3	1 29 48.6
15.0	51 41 47.9	5 0 19.1	15.0	86 11 50.5	4 27 59.8	15.0	136 4 14.5	0 54 23.7
15.5	57 49 33.7	5 4 29.1	15.5	92 38 13.0	4 11 3.7	15.5	142 56 41.0	+0 17 57.3
16.0	63 59 45.6	+5 5 8.0	16.0	99 7 28.1	+3 50 44.6	16.0	149 51 21.3	−0 18 58.6
16.5	70 12 35.3	5 2 11.3	16.5	105 39 39.9	3 27 13.6	16.5	156 48 11.9	0 55 50.7
17.0	76 28 16.0	4 55 36.4	17.0	112 14 53.9	3 0 44.7	17.0	163 47 9.7	1 32 4.6
17.5	82 47 2.0	4 45 22.5	17.5	118 53 17.8	2 31 34.9	17.5	170 48 11.1	2 7 6.3
18.0	89 9 9.2	4 31 31.4	18.0	125 35 0.1	2 0 3.9	18.0	177 51 11.0	2 40 21.8
18.5	95 34 55.2	+4 14 6.9	18.5	132 20 10.3	+1 26 34.5	18.5	184 56 2.8	−3 11 18.1
19.0	102 4 38.3	3 53 15.8	19.0	139 8 58.0	0 51 32.1	19.0	192 2 36.1	3 39 23.9
19.5	108 38 37.6	3 29 6.1	19.5	146 1 32.3	+0 15 24.7	19.5	199 10 37.2	4 4 10.3
20.0	115 17 12.2	3 1 50.6	20.0	152 58 0.2	−0 21 16.9	20.0	206 19 48.0	4 25 11.3
20.5	122 0 40.3	2 31 44.5	20.5	159 58 26.3	0 57 59.9	20.5	213 29 45.5	4 42 4.7
21.0	128 49 18.1	+1 59 6.2	21.0	167 2 50.6	−1 34 9.5	21.0	220 40 2.1	−4 54 33.3
21.5	135 43 19.0	1 24 18.8	21.5	174 11 7.7	2 9 9.4	21.5	227 50 6.0	5 2 23.9
22.0	142 42 51.9	0 47 48.5	22.0	181 23 5.1	2 42 22.6	22.0	234 59 21.9	5 5 30.1
22.5	149 47 59.6	+0 10 6.2	22.5	188 38 23.1	3 13 12.5	22.5	242 7 11.7	5 3 50.7
23.0	156 58 37.3	−0 28 12.9	23.0	195 56 33.4	3 41 3.5	23.0	249 12 56.1	4 57 30.5
23.5	164 14 31.7	−1 6 31.2	23.5	203 16 59.3	−4 5 22.7	23.5	256 15 56.4	−4 46 40.3
24.0	171 35 19.3	1 44 6.4	24.0	210 38 55.9	4 25 41.0	24.0	263 15 35.7	4 31 36.0
24.5	179 0 25.7	2 20 15.6	24.5	218 1 31.5	4 41 34.4	24.5	270 11 20.5	4 12 38.2
25.0	186 29 5.4	2 54 15.1	25.0	225 23 48.9	4 52 45.2	25.0	277 2 41.8	3 50 11.1
25.5	194 0 23.4	3 25 22.5	25.5	232 44 48.1	4 59 2.5	25.5	283 49 16.3	3 24 41.8
26.0	201 33 15.0	−3 52 58.6	26.0	240 3 28.4	−5 0 23.1	26.0	290 30 47.4	−2 56 38.9
26.5	209 6 29.0	4 16 29.4	26.5	247 18 51.6	4 56 51.0	26.5	297 7 5.2	2 26 32.1
27.0	216 38 50.5	4 35 27.4	27.0	254 30 3.8	4 48 37.3	27.0	303 38 6.7	1 54 50.8
27.5	224 9 3.9	4 49 33.0	27.5	261 36 18.4	4 35 59.1	27.5	310 3 55.7	1 22 3.8
28.0	231 35 56.4	4 58 35.9	28.0	268 36 57.4	4 19 18.4	28.0	316 24 42.4	0 48 38.3
28.5	238 58 21.5	5 2 33.3	28.5	275 31 32.3	3 59 0.8	28.5	322 40 42.8	−0 14 59.9
29.0	246 15 21.4	−5 1 31.3	29.0	282 19 45.1	−3 35 34.5	29.0	328 52 18.2	+0 18 27.6
29.5	253 26 9.4	4 55 42.4	29.5	289 1 27.8	3 9 28.8	29.5	334 59 54.4	0 51 22.5
30.0	260 30 10.5	4 45 25.6	30.0	295 36 42.5	2 41 12.8	30.0	341 4 0.7	1 23 25.0
30.5	267 27 3.1	4 31 3.1	30.5	302 5 39.6	2 11 15.3	30.5	347 5 9.6	1 54 17.1
31.0	274 16 37.0	4 13 1.0	31.0	308 28 37.4	1 40 3.5	31.0	353 3 56.1	2 23 42.3
31.5	280 58 53.7	−3 51 46.0	31.5	314 46 0.8	−1 8 3.1	31.5	359 0 56.9	+2 51 25.5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		Day of Month.	AUGUST.		Day of Month.	SEPTEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latit
	° ′ ″	° ′ ″		° ′ ″	° ′ ″		° ′ ″	° ′
1.0	353 3 56.1	+2 23 42.3	1.0	36 38 45.1	+5 0 45.1	1.0	81 29 56.6	+4 41
1.5	359 0 56.9	2 51 25.5	1.5	42 38 26.0	5 9 17.2	1.5	87 50 53.3	4 24
2.0	4 56 49.5	3 17 12.5	2.0	48 40 37.2	5 14 28.5	2.0	94 17 16.6	4 3
2.5	10 52 12.0	3 40 50.3	2.5	54 45 52.7	5 16 11.6	2.5	100 49 31.1	3 38
3.0	16 47 43.0	4 2 6.4	3.0	60 54 44.7	5 14 19.6	3.0	107 27 57.1	3 10
3.5	22 44 0.1	+4 20 48.7	3.5	67 7 43.3	+5 8 46.7	3.5	114 12 49.3	+2 39
4.0	28 41 39.6	4 36 45.9	4.0	73 25 15.6	4 59 28.4	4.0	121 4 15.2	2 6
4.5	34 41 16.5	4 49 46.7	4.5	79 47 44.9	4 46 22.3	4.5	128 2 14.6	1 29
5.0	40 43 23.7	4 59 40.3	5.0	86 15 30.4	4 29 28.4	5.0	135 6 38.2	0 51
5.5	46 48 31.2	5 6 16.6	5.5	92 48 46.0	4 8 49.6	5.5	142 17 6.9	+0 12
6.0	52 57 5.7	+5 9 26.3	6.0	99 27 39.8	+3 44 32.7	6.0	149 33 11.5	−0 27
6.5	59 9 30.5	5 9 0.9	6.5	106 12 13.6	3 16 48.5	6.5	156 54 13.1	1 7
7.0	65 26 4.6	5 4 53.6	7.0	113 2 22.1	2 45 52.8	7.0	164 19 23.1	1 46
7.5	71 47 2.2	4 56 59.4	7.5	119 57 53.2	2 12 6.3	7.5	171 47 45.0	2 24
8.0	78 12 32.6	4 45 15.9	8.0	126 58 27.7	1 35 55.4	8.0	179 18 15.2	2 59
8.5	84 42 39.6	+4 29 43.5	8.5	134 3 39.7	+0 57 51.5	8.5	186 49 47.0	−3 32
9.0	91 17 22.4	4 10 25.9	9.0	141 12 57.0	+0 18 30.5	9.0	194 21 11.4	4 0
9.5	97 56 35.0	3 47 31.2	9.5	148 25 42.1	−0 21 27.8	9.5	201 51 20.5	4 24
10.0	104 40 6.3	3 21 11.9	10.0	155 41 13.2	1 1 20.9	10.0	209 19 10.9	4 44
10.5	111 27 41.1	2 51 44.5	10.5	162 58 45.7	1 40 25.2	10.5	216 43 45.2	4 59
11.0	118 19 0.7	+2 19 30.3	11.0	170 17 33.3	−2 17 57.2	11.0	224 4 13.7	−5 8
11.5	125 13 43.3	1 44 55.6	11.5	177 36 49.7	2 53 15.4	11.5	231 19 55.9	5 13
12.0	132 11 25.1	1 8 29.9	12.0	184 55 50.1	3 25 41.5	12.0	238 30 21.5	5 13
12.5	139 11 41.0	+0 30 46.7	12.5	192 13 52.0	3 54 41.8	12.5	245 35 10.5	5 7
13.0	146 14 5.7	−0 7 38.2	13.0	199 30 16.8	4 19 47.8	13.0	252 34 11.5	4 58
13.5	153 18 14.4	−0 46 7.3	13.5	206 44 30.5	−4 40 37.0	13.5	259 27 22.0	−4 44
14.0	160 23 43.0	1 24 2.3	14.0	213 56 3.6	4 56 53.0	14.0	266 14 46.5	4 26
14.5	167 30 8.7	2 0 45.1	14.5	221 4 32.0	5 8 25.7	14.5	272 56 35.6	4 5
15.0	174 37 10.3	2 35 39.3	15.0	228 9 36.7	5 15 10.4	15.0	279 33 4.8	3 41
15.5	181 44 28.3	3 8 10.3	15.5	235 11 3.5	5 17 8.3	15.5	286 4 32.8	3 14
16.0	188 51 44.7	−3 37 46.2	16.0	242 8 42.8	−5 14 24.8	16.0	292 31 20.7	−2 45
16.5	195 58 42.5	4 3 58.8	16.5	249 2 28.4	5 7 10.0	16.5	298 53 51.1	2 15
17.0	203 5 5.9	4 26 23.9	17.0	255 52 18.0	4 55 37.7	17.0	305 12 26.8	1 43
17.5	210 10 39.5	4 44 41.5	17.5	262 38 11.8	4 40 4.5	17.5	311 27 30.5	1 10
18.0	217 15 7.9	4 58 36.1	18.0	269 20 11.9	4 20 49.7	18.0	317 39 24.1	0 36
18.5	224 18 15.9	−5 7 57.2	18.5	275 58 22.2	−3 58 14.8	18.5	323 48 28.4	−0 3
19.0	231 19 47.9	5 12 39.0	19.0	282 32 48.1	3 32 43.1	19.0	329 55 3.0	+0 30
19.5	238 19 27.7	5 12 40.6	19.5	289 3 35.5	3 4 39.0	19.5	335 59 25.8	1 2
20.0	245 16 58.8	5 8 5.6	20.0	295 30 50.9	2 34 27.9	20.0	342 1 53.7	1 34
20.5	252 12 4.3	4 59 2.4	20.5	301 54 41.2	2 2 35.5	20.5	348 2 41.9	2 5
21.0	259 4 27.8	−4 45 43.8	21.0	308 15 13.9	−1 29 28.1	21.0	354 2 4.6	+2 34
21.5	265 53 52.9	4 28 26.4	21.5	314 32 36.8	0 55 31.6	21.5	0 0 15.3	3 1
22.0	272 40 4.3	4 7 30.2	22.0	320 46 58.1	−0 21 11.4	22.0	5 57 27.1	3 26
22.5	279 22 48.1	3 43 18.1	22.5	326 58 26.7	+0 13 7.8	22.5	11 53 52.8	3 49
23.0	286 1 52.1	3 16 15.5	23.0	333 7 12.2	0 47 2.3	23.0	17 49 45.2	4 10
23.5	292 37 6.6	−2 46 49.5	23.5	339 13 25.4	+1 20 9.8	23.5	23 45 18.0	+4 27
24.0	299 8 24.9	2 15 27.9	24.0	345 17 18.1	1 52 9.3	24.0	29 40 45.6	4 42
24.5	305 35 43.4	1 42 39.1	24.5	351 19 3.5	2 22 41.4	24.5	35 36 23.7	4 53
25.0	311 59 1.8	1 8 51.0	25.0	357 18 56.4	2 51 28.5	25.0	41 32 29.5	5 2
25.5	318 18 23.4	0 34 31.0	25.5	3 17 13.2	3 18 14.3	25.5	47 29 22.1	5 7
26.0	324 33 55.2	−0 0 5.0	26.0	9 14 12.3	+3 42 44.3	26.0	53 27 22.4	+5 9
26.5	330 45 48.2	+0 34 2.3	26.5	15 10 14.0	4 4 45.6	26.5	59 26 53.4	5 7
27.0	336 54 16.4	1 7 28.1	27.0	21 5 40.3	4 24 6.7	27.0	65 28 20.1	5 2
27.5	342 59 37.5	1 39 51.6	27.5	27 0 55.5	4 40 37.4	27.5	71 32 9.7	4 54
28.0	349 2 12.5	2 10 53.7	28.0	32 56 25.6	4 54 8.7	28.0	77 38 51.0	4 42
28.5	355 2 25.1	2 40 17.0	28.5	38 52 38.5	5 4 32.4	28.5	83 48 54.6	4 27
29.0	1 0 41.9	+3 7 45.9	29.0	44 50 4.0	+5 11 41.6	29.0	90 2 52.0	+4 9
29.5	6 57 31.6	3 33 6.2	29.5	50 49 13.1	5 15 30.3	29.5	96 21 15.2	3 47
30.0	12 53 25.0	3 56 5.2	30.0	56 50 38.0	5 15 52.7	30.0	102 44 36.1	3 22
30.5	18 48 54.9	4 16 31.0	30.5	62 54 51.5	5 12 44.6	30.5	109 13 25.9	2 5
31.0	24 44 34.9	4 34 12.8	31.0	69 2 27.2	5 6 2.3	31.0	115 48 13.2	2 2
31.5	30 40 59.8	+4 49 0.6	31.5	75 13 58.2	+4 55 43.7	31.5	122 29 23.2	+1 5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		Day of Month.	NOVEMBER.		Day of Month.	DECEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
	° ′ ″	° ′ ″		° ′ ″	° ′ ″		° ′ ″	° ′ ″
1.0	115 48 13.2	+2 24 36.7	1.0	166 10 34.7	−2 7 51.4	1.0	204 41 14.0	−4 38 10.2
1.5	122 29 23.2	1 51 43.5	1.5	173 26 20.8	2 41 26.7	1.5	212 6 32.8	4 51 11.9
2.0	129 17 16.4	1 16 43.9	2.0	180 48 13.7	3 12 47.1	2.0	219 34 34.1	4 59 20.9
2.5	136 12 7.0	0 40 2.8	2.5	188 15 36.1	3 41 11.8	2.5	227 4 15.6	5 2 23.6
3.0	143 14 0.6	+0 2 9.7	3.0	195 47 37.2	4 6 1.9	3.0	234 34 28.0	5 0 14.0
3.5	150 22 53.2	−0 36 20.8	3.5	203 23 13.2	−4 26 41.7	3.5	242 3 58.5	−4 52 54.7
4.0	157 38 29.6	1 14 49.7	4.0	211 1 9.6	4 42 41.4	4.0	249 31 33.6	4 40 36.4
4.5	165 0 22.1	1 52 34.6	4.5	218 40 3.5	4 53 38.6	4.5	256 56 2.0	4 23 38.2
5.0	172 27 50.0	2 28 50.0	5.0	226 18 28.0	4 59 19.3	5.0	264 16 18.9	4 2 25.5
5.5	179 59 59.7	3 2 50.2	5.5	233 54 55.8	4 59 39.3	5.5	271 31 28.0	3 37 29.2
6.0	187 35 46.2	−3 33 50.1	6.0	241 28 3.9	−4 54 43.6	6.0	278 40 43.7	−3 9 23.9
6.5	195 13 54.8	4 1 8.3	6.5	248 56 36.8	4 44 46.1	6.5	285 43 31.8	2 38 46.1
7.0	202 53 3.7	4 24 8.8	7.0	256 19 30.6	4 30 8.4	7.0	292 39 30.2	2 6 12.9
7.5	210 31 48.1	4 42 22.9	7.5	263 35 54.2	4 11 17.6	7.5	299 28 28.8	1 32 20.1
8.0	218 8 44.1	4 55 31.0	8.0	270 45 10.9	3 48 44.9	8.0	306 10 28.3	0 57 41.9
8.5	225 42 31.5	−5 3 22.3	8.5	277 46 58.2	−3 23 3.9	8.5	312 45 39.2	−0 22 49.6
9.0	233 11 59.0	5 5 55.7	9.0	284 41 7.7	2 54 48.7	9.0	319 14 20.2	+0 11 48.5
9.5	240 36 5.8	5 3 18.6	9.5	291 27 42.8	2 24 33.0	9.5	325 36 56.8	0 45 47.1
10.0	247 54 3.6	4 55 45.7	10.0	298 6 57.5	1 52 48.9	10.0	331 53 59.9	1 18 43.8
10.5	255 5 17.7	4 43 37.6	10.5	304 39 14.4	1 20 6.5	10.5	338 6 4.2	1 50 19.0
11.0	262 9 27.1	−4 27 19.4	11.0	311 5 2.7	−0 46 53.5	11.0	344 13 47.3	+2 20 15.8
11.5	269 6 23.1	4 7 18.6	11.5	317 24 56.4	−0 13 35.1	11.5	350 17 48.3	2 48 19.1
12.0	275 56 8.3	3 44 4.4	12.0	323 39 32.9	+0 19 25.6	12.0	356 18 46.8	3 14 15.5
12.5	282 38 55.3	3 18 6.3	12.5	329 49 31.3	0 51 47.9	12.5	2 17 22.5	3 37 53.4
13.0	289 15 3.6	2 49 53.2	13.0	335 55 31.2	1 23 12.8	13.0	8 14 14.3	3 59 2.0
13.5	295 44 59.3	−2 19 53.0	13.5	341 58 12.3	+1 53 23.2	13.5	14 9 59.5	+4 17 31.5
14.0	302 9 12.3	1 48 32.7	14.0	347 58 13.0	2 22 3.1	14.0	20 5 13.6	4 33 12.9
14.5	308 28 15.2	1 16 17.6	14.5	353 56 9.8	2 48 57.8	14.5	26 0 30.1	4 45 58.2
15.0	314 42 42.3	0 43 31.5	15.0	359 52 37.1	3 13 53.5	15.0	31 56 19.5	4 55 39.7
15.5	320 53 7.9	−0 10 36.9	15.5	5 48 6.7	3 36 37.5	15.5	37 53 9.4	5 2 10.8
16.0	327 0 5.5	+0 22 5.2	16.0	11 43 7.3	+3 56 57.7	16.0	43 51 24.3	+5 5 25.8
16.5	333 4 7.8	0 54 14.5	16.5	17 38 4.9	4 14 42.9	16.5	49 51 25.5	5 5 19.9
17.0	339 5 45.3	1 25 32.0	17.0	23 33 22.0	4 29 42.6	17.0	55 53 31.0	5 1 49.8
17.5	345 5 26.3	1 55 40.0	17.5	29 29 17.8	4 41 47.4	17.5	61 57 55.5	4 54 53.8
18.0	351 3 36.5	2 24 21.2	18.0	35 26 9.3	4 50 49.2	18.0	68 4 50.3	4 44 32.1
18.5	357 0 39.2	+2 51 19.4	18.5	41 24 9.9	+4 56 41.0	18.5	74 14 23.8	+4 30 47.0
19.0	2 56 55.0	3 16 19.6	19.0	47 23 30.8	4 59 17.1	19.0	80 26 41.9	4 13 43.1
19.5	8 52 42.0	3 39 7.4	19.5	53 24 21.2	4 58 33.5	19.5	86 41 48.1	3 53 27.7
20.0	14 48 16.1	3 59 29.6	20.0	59 26 48.7	4 54 28.2	20.0	92 59 44.2	3 30 11.0
20.5	20 43 51.1	4 17 14.4	20.5	65 30 59.4	4 47 0.8	20.5	99 20 30.4	3 4 5.7
21.0	26 39 39.2	+4 32 10.9	21.0	71 36 59.1	+4 36 13.3	21.0	105 44 5.8	+2 35 27.8
21.5	32 35 51.4	4 44 9.8	21.5	77 44 53.4	4 22 9.7	21.5	112 10 30.3	2 4 35.9
22.0	38 32 37.8	4 53 3.4	22.0	83 54 48.5	4 4 56.3	22.0	118 39 43.0	1 31 51.1
22.5	44 30 8.4	4 58 45.3	22.5	90 6 51.5	3 44 41.4	22.5	125 11 44.0	0 57 37.2
23.0	50 28 33.2	5 1 10.9	23.0	96 21 11.2	3 21 35.7	23.0	131 46 34.3	+0 22 19.9
23.5	56 28 3.0	+5 0 17.2	23.5	102 37 57.9	+2 55 52.0	23.5	138 24 16.0	−0 13 33.0
24.0	62 28 49.6	4 56 2.9	24.0	108 57 24.1	2 27 45.4	24.0	145 4 52.4	0 49 32.5
24.5	68 31 6.5	4 48 28.5	24.5	115 19 44.6	1 57 32.9	24.5	151 48 27.6	1 25 8.4
25.0	74 35 8.8	4 37 36.1	25.0	121 45 16.1	1 25 33.5	25.0	158 35 6.3	1 59 49.9
25.5	80 41 14.1	4 23 29.2	25.5	128 14 17.2	0 52 8.4	25.5	165 24 53.2	2 33 5.7
26.0	86 49 42.3	+4 6 13.4	26.0	134 47 7.8	+0 17 40.7	26.0	172 17 52.4	−3 4 24.7
26.5	93 0 55.6	3 45 55.8	26.5	141 24 8.3	−0 17 24.6	26.5	179 14 6.5	3 33 16.2
27.0	99 15 18.3	3 22 45.4	27.0	148 5 38.9	0 52 40.2	27.0	186 13 35.3	3 59 10.8
27.5	105 33 17.0	2 56 52.7	27.5	154 51 58.3	1 27 37.2	27.5	193 16 15.4	4 21 40.6
28.0	111 55 19.4	2 28 30.8	28.0	161 43 22.5	2 1 44.6	28.0	200 21 59.2	4 40 20.1
28.5	118 21 54.3	1 57 54.7	28.5	168 40 3.4	2 34 30.0	28.5	207 30 33.6	4 54 46.6
29.0	124 53 30.7	+1 25 22.1	29.0	175 42 6.7	−3 5 19.8	29.0	214 41 39.7	−5 4 41.3
29.5	131 30 36.6	0 51 13.3	29.5	182 49 31.0	3 33 39.9	29.5	221 54 52.3	5 9 49.8
30.0	138 13 37.5	+0 15 52.0	30.0	190 2 5.9	3 58 56.3	30.0	229 9 40.1	5 10 3.1
30.5	145 2 55.2	−0 20 15.0	30.5	197 19 30.7	4 20 36.4	30.5	236 25 25.9	5 5 18.2
31.0	151 58 46.1	0 56 37.6	31.0	204 41 14.0	4 38 10.2	31.0	243 41 27.4	4 55 38.6
31.5	159 1 19.4	−1 32 41.9	31.5	212 6 32.8	−4 51 11.9	31.5	250 56 58.6	−4 41 14.0

GREENWICH MEAN TIME.				
	THE MOON'S EQUATOR.			
Date.	*i* Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	☊′ Ascending Node on Earth's Equator.	☾ Mean Longitude of the Moon.
	° ′	° ′	° ′	° ′
Jan. 1	22 6.3	155 2.8	1 34.1	112 54.2
11	22 6.6	154 29.3	1 36.0	244 40.0
21	22 7.0	153 55.7	1 38.0	16 25.9
31	22 7.3	153 22.2	1 39.9	148 11.7
Feb. 10	22 7.7	152 48.6	1 41.9	279 57.5
20	22 8.1	152 15.0	1 43.9	51 43.4
March 1	22 8.5	151 41.5	1 45.8	183 29.2
11	22 8.9	151 8.0	1 47.7	315 15.0
21	22 9.4	150 34.4	1 49.6	87 0.9
31	22 9.8	150 0.9	1 51.5	218 46.7
April 10	22 10.1	149 27.4	1 53.4	350 32.5
20	22 10.5	148 53.9	1 55.2	122 18.4
30	22 10.9	148 20.5	1 57.1	254 4.2
May 10	22 11.3	147 47.0	1 58.9	25 50.1
20	22 11.7	147 13.6	2 0.8	157 35.9
30	22 12.2	146 40.1	2 2.6	289 21.7
June 9	22 12.7	146 6.7	2 4.4	61 7.6
19	22 13.2	145 33.3	2 6.2	192 53.4
29	22 13.7	144 59.8	2 8.0	324 39.2
July 9	22 14.2	144 26.4	2 9.8	96 25.1
19	22 14.6	143 53.0	2 11.5	228 10.9
29	22 15.1	143 19.6	2 13.2	359 56.7
Aug. 8	22 15.6	142 46.3	2 14.9	131 42.6
18	22 16.1	142 12.9	2 16.6	263 28.4
28	22 16.6	141 39.6	2 18.3	35 14.3
Sept. 7	22 17.1	141 6.2	2 20.1	167 0.1
17	22 17.6	140 32.9	2 21.8	298 45.9
27	22 18.2	139 59.6	2 23.4	70 31.8
Oct. 7	22 18.7	139 26.3	2 25.1	202 17.6
17	22 19.3	138 53.0	2 26.7	334 3.4
27	22 19.8	138 19.7	2 28.4	105 49.3
Nov. 6	22 20.3	137 46.5	2 30.0	237 35.1
16	22 20.9	137 13.3	2 31.5	9 20.9
26	22 21.4	136 40.1	2 33.1	141 6.8
Dec. 6	22 22.0	136 6.9	2 34.6	272 52.6
16	22 22.5	135 33.7	2 36.2	44 38.5
26	22 23.1	135 0.5	2 37.7	176 24.3
36	22 23.7	134 27.3	2 39.2	308 10.1

Mean Solar Days.	Motion of ☾.
	° ′
0.1	1 19.06
0.2	2 38.12
0.3	3 57.18
0.4	5 16.23
0.5	6 35.29
0.6	7 54.35
0.7	9 13.41
0.8	10 32.47
0.9	11 51.53
1.0	13 10.58
2.0	26 21.17
3.0	39 31.75
4.0	52 42.33
5.0	65 52.92
6.0	79 3.50
7.0	92 14.09
8.0	105 24.67
9.0	118 35.25
10.0	131 45.84
Hours.	° ′
1	0 32.94
2	1 5.88
3	1 38.82
4	2 11.76
5	2 44.70
6	3 17.65
7	3 50.59
8	4 23.53
9	4 56.47
10	5 29.41
11	6 2.35
12	6 35.29
13	7 8.23
14	7 41.17
15	8 14.11
16	8 47.06
17	9 20.00
18	9 52.94
19	10 25.88
20	10 58.82
21	11 31.76
22	12 4.70
23	12 37.64

TABLE FOR THE LIBRATION OF THE MOON.

Argument, (☊ − λ) or (☊ − λ − 180°).

☊ − λ	$\Delta\lambda$	$\frac{1}{a}$	B		☊ − λ	$\Delta\lambda$	$\frac{1}{a}$	B	
°	′		° ′	°	°	′		° ′	°
0	0.0	39	0 0.0	180	46	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					
	$\Delta\lambda$	$\frac{1}{a}$	B	☊ − λ		$\Delta\lambda$	$\frac{1}{a}$	B	☊ − λ

$\Delta\lambda$ has the sign of tan (λ − ☊)
a has the sign of cos (☊ − λ)
B has the sign of sin (☊ − λ)

FOR GREENWICH MEAN NOON.

Date.	Apparent Obliquity of the Ecliptic. (HANSEN.)	Equation of Equinoxes.		Precesssion of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Par.	
	° ′ ″	″	s	″	″	″	° ′
Jan. 1	23 27 17.81	+ 7.21	+ 0.441	0.00	− 20.79	9.00	336 29.6
11	17.87	7.74	0.473	1.38	20.79	9.00	335 57.8
21	17.96	8.15	0.498	2.75	20.77	8.99	335 26.1
31	18.10	8.42	0.516	4.13	20.75	8.98	334 54.3
Feb. 10	18.25	8.55	0.523	5.50	20.71	8.96	334 22.5
20	23 27 18.38	+ 8.53	+ 0.522	6.88	− 20.67	8.94	333 50.7
March 1	18.46	8.37	0.512	8.26	20.62	8.92	333 19.0
11	18.50	8.13	0.497	9.63	20.57	8.90	332 47.2
21	18.47	7.84	0.480	11.01	20.51	8.88	332 15.4
31	18.38	7.56	0.462	12.38	20.45	8.85	331 43.7
April 10	23 27 18.22	+ 7.35	+ 0.450	13.76	− 20.39	8.82	331 11.9
20	18.02	7.22	0.442	15.14	20.33	8.80	330 40.1
30	17.80	7.23	0.442	16.51	20.28	8.78	330 8.3
May 10	17.56	7.38	0.451	17.89	20.23	8.76	329 36.6
20	17.35	7.65	0.468	19.26	20.19	8.74	329 4.8
30	23 27 17.15	+ 8.05	+ 0.492	20.64	− 20.16	8.72	328 33.0
June 9	17.01	8.54	0.522	22.02	20.13	8.71	328 1.2
19	16.91	9.07	0.555	23.39	20.12	8.71	327 29.5
29	16.88	9.61	0.588	24.77	20.11	8.70	326 57.7
July 9	16.90	10.10	0.618	26.14	20.11	8.70	326 25.9
19	23 27 16.95	+ 10.53	+ 0.644	27.52	− 20.12	8.71	325 54.2
29	17.04	10.83	0.662	28.90	20.14	8.72	325 22.4
Aug. 8	17.17	11.01	0.673	30.27	20.17	8.73	324 50.6
18	17.29	11.06	0.676	31.65	20.21	8.75	324 18.8
28	17.39	10.97	0.671	33.02	20.25	8.77	323 47.1
Sept. 7	23 27 17.44	+ 10.77	+ 0.659	34.40	− 20.30	8.79	323 15.3
17	17.44	10.51	0.642	35.78	20.36	8.81	322 43.5
27	17.37	10.21	0.624	37.15	20.41	8.83	322 11.7
Oct. 7	17.23	9.94	0.608	38.53	20.47	8.86	321 40.0
17	17.05	9.72	0.594	39.90	20.53	8.89	321 8.2
27	23 27 16.83	+ 9.61	+ 0.588	41.28	− 20.59	8.91	320 36.4
Nov. 6	16.58	9.66	0.591	42.66	20.64	8.93	320 4.7
16	16.33	9.86	0.603	44.03	20.69	8.95	319 32.9
26	16.11	10.21	0.624	45.41	20.73	8.97	319 1.1
Dec. 6	15.91	10.65	0.651	46.78	20.76	8.98	318 29.3
16	23 27 15.79	+ 11.18	+ 0.684	48.16	− 20.78	8.99	317 57.6
26	15.72	11.75	0.719	49.54	20.79	9.00	317 25.8
36	23 27 15.72	+ 12.28	+ 0.751	50.91	− 20.79	9.00	316 54.0

Mean Obliquity, 1896.0, 23° 27′ 9″.89 (HANSEN).
Mean Obliquity, 1896.0, 23° 27′ 9″.62 (PETERS).

Precession for 1896	50″.2629	log 1.70125
Precession in a Solar Day	0″.1373	log 9.13777
Precession in a Sidereal Day	0″.1370	log 9.13658
Sun's Mean Equatorial Horizontal Parallax	8″.848	log 0.94685

Daily Motion of ☊ −3′.177

PART II

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USIN THE NOTATION OF BESSEL, AND THE CONSTANTS OF PETERS AND STRUVE.

NOTATION.

τ, the time, reckoned in units of one year, from the beginning of the Besselian fictitious year, (18 December $31^d.133 = 1896$, January $0^d.133$, Washington mean time),
α_0, δ_0, the star's mean right ascension and declination at the beginning of the fictitious year,
α, δ, the star's apparent right ascension and declination at the time τ,
μ, μ', the annual proper motion in right ascension and declination,
μ $\odot$, the sun's true longitude,
☊, the longitude of the moon's ascending node,
ω, the obliquity of the ecliptic,
Γ, the longitude of the sun's perigee,
Γ', the longitude of the moon's perigee.
☾, the moon's mean longitude

BESSELIAN STAR-NUMBER

$$\begin{aligned} A = \tau & - 0.34249 \sin \text{☊} & & - 0.00011 \sin (3 \odot - \Gamma) \\ & + 0.00410 \sin 2 \text{☊} & & - 0.00005 \sin 2 (\odot - \text{☊}) \\ & - 0.02521 \sin 2 \odot & & + 0.00010 \sin 2 (\odot - \Gamma') \\ & + 0.00293 \sin (\odot + 82^\circ\ 4') & & + 0.00009 \sin (2 \Gamma' - \text{☊}) \\ & + 0.00025 \sin (2 \odot - \text{☊}) & & + 0.00005 \cos \Gamma' \\ & - 0.00405 \sin 2 \text{☾} & & + 0.00004 \sin 2 \Gamma' \\ & + 0.00135 \sin (\text{☾} - \Gamma') & & \end{aligned}$$

$$\begin{aligned} B = & - 9''.2239 \cos \text{☊} & & - 0''.0027 \cos (3 \odot - \Gamma) \\ & + 0.0895 \cos 2 \text{☊} & & + 0.0067 \cos (2 \odot - \text{☊}) \\ & - 0.5506 \cos 2 \odot & & + 0.0024 \cos (2 \Gamma' - \text{☊}) \\ & - 0.0092 \cos (\odot + 281^\circ\ 3') & & - 0.0023 \sin \Gamma' \\ & - 0.0886 \cos 2 \text{☾} & & + 0.0008 \cos 2 \Gamma' \end{aligned}$$

$$C = - 20''.4451 \cos \omega \cos \odot$$
$$D = - 20.4451 \sin \odot$$
$$E = - 0.0461 \sin \text{☊} + 0''.0014 \sin 2 \text{☊} - 0''.0033 \sin 2 \odot$$

Bessel's *Star-Constants.*

$a = 3^s.07263 + 1^s.33683 \sin \alpha_0 \tan \delta_0 =$ precession in right ascension
$b = \tfrac{1}{15} \cos \alpha_0 \tan \delta_0$
$c = \tfrac{1}{15} \cos \alpha_0 \sec \delta_0$
$d = \tfrac{1}{15} \sin \alpha_0 \sec \delta_0$
$a' = 20''.0525 \cos \alpha_0 =$ precession in declination
$b' = - \sin \alpha_0$
$c' = \tan \omega \cos \delta_0 - \sin \alpha_0 \sin \delta_0$
$d' = \cos \alpha_0 \sin \delta_0$

Reduction to Apparent Position.

$\alpha = \alpha_0 + \tau \mu + A a + B b + C c + D d + \tfrac{1}{15} E$ (in time)
$\delta = \delta_0 + \tau \mu' + A a' + B b' + C c' + D d'$ (in arc)

INDEPENDENT STAR-NUMBERS.

$f = 46''.0894\, A + E$ (in arc) $= 3^s.07263\, A + \tfrac{1}{15} E$ (in time)
$g \sin G = B$ $\quad h \sin H = C$ $\quad i = C \tan \omega$
$g \cos G = 20''.0525\, A$ $\quad h \cos H = D$

Reduction to Apparent Position.

$\alpha = \alpha_0 + f + \tau \mu + \tfrac{1}{15} g \sin (G + \alpha_0) \tan \delta_0 + \tfrac{1}{15} h \sin (H + \alpha_0) \sec \delta_0$ (in time)
$\delta = \delta_0 + \tau \mu' + g \cos (G + \alpha_0) + h \cos (H + \alpha_0) \sin \delta_0 + i \cos \delta_0$ (in arc)

Notes.—(1) The independent star-numbers are more convenient, when only one or two appa positions of a star are required, or when Bessel's star-constants are not known v sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(2) In using the star-constants of the *British Association Catalogue*, a, b, c, d, a', b', c', must be changed to c, d, a, b, $-c'$, $-d'$, $-a'$, $-b'$, respectively.

FOR WASHINGTON MEAN MIDNIGHT.

olar Day. id. Hour.)	Log *A.*	Log *B.*	Log *C.*	Log *D.*	Solar Day. (Sid. Hour.)	Log *A.*	Log *B.*	Log *C.*	Log *D.*
n. 0	+9.1608	−0.8923	−0.5274	+1.3035	Feb. 15	+9.4761	−0.9319	−1.1971	+1.0458
1	9.1762	0.8943	0.5677	1.3020	16	9.4768	0.9325	1.2019	1.0339
2	9.1892	0.8968	0.6044	1.3004	17	9.4779	0.9322	1.2066	1.0214
3	9.1995	0.8992	0.6382	1.2987	18	9.4799	0.9312	1.2111	1.0084
4	9.2075	0.9012	0.6693	1.2968	$^{\rm h}$ (10.0) 19	9.4829	0.9298	1.2154	0.9948
$^{\rm h}$ (7.0) 5	+9.2140	−0.9024	−0.6983	+1.2947	20	+9.4872	−0.9285	−1.2195	+0.9806
6	9.2201	0.9027	0.7254	1.2924	21	9.4925	0.9277	1.2235	0.9658
7	9.2265	0.9020	0.7505	1.2900	22	9.4984	0.9276	1.2273	0.9504
8	9.2342	0.9006	0.7745	1.2875	23	9.5043	0.9285	1.2309	0.9343
9	9.2434	0.8989	0.7969	1.2848	24	9.5098	0.9303	1.2343	0.9175
10	+9.2545	−0.8974	−0.8181	+1.2820	25	+9.5144	−0.9326	−1.2376	+0.8999
11	9.2667	0.8963	0.8383	1.2791	26	9.5181	0.9351	1.2407	0.8814
12	9.2794	0.8962	0.8575	1.2760	27	9.5206	0.9375	1.2436	0.8619
13	9.2917	0.8971	0.8757	1.2727	28	9.5223	0.9392	1.2464	0.8414
14	9.3029	0.8989	0.8930	1.2692	29	9.5234	0.9401	1.2491	0.8198
15	+9.3122	−0.9015	−0.9094	+1.2656	Mar. 1	+9.5245	−0.9401	−1.2517	+0.7968
16	9.3195	0.9044	0.9248	1.2618	2	9.5260	0.9392	1.2542	0.7725
17	9.3249	0.9070	0.9397	1.2579	3	9.5282	0.9377	1.2565	0.7465
18	9.3287	0.9091	0.9541	1.2538	4	9.5315	0.9360	1.2586	0.7189
19	9.3316	0.9104	0.9680	1.2495	5	9.5357	0.9345	1.2605	0.6892
$^{\rm h}$ 8.0) 20	+9.3344	−0.9107	−0.9813	+1.2450	$^{\rm h}$ (11.0) 6	+9.5405	−0.9335	−1.2621	+0.6572
21	9.3380	0.9101	0.9941	1.2403	7	9.5456	0.9334	1.2637	0.6225
22	9.3428	0.9089	1.0064	1.2355	8	9.5504	0.9342	1.2652	0.5847
23	9.3492	0.9075	1.0182	1.2305	9	9.5546	0.9358	1.2666	0.5432
24	9.3571	0.9064	1.0295	1.2252	10	9.5578	0.9378	1.2679	0.4972
25	+9.3661	−0.9059	−1.0403	+1.2197	11	+9.5599	−0.9399	−1.2690	+0.4456
26	9.3757	0.9064	1.0507	1.2140	12	9.5611	0.9417	1.2700	0.3870
27	9.3850	0.9079	1.0607	1.2081	13	9.5614	0.9428	1.2709	0.3190
28	9.3935	0.9102	1.0704	1.2020	14	9.5614	0.9429	1.2716	0.2383
29	9.4006	0.9130	1.0798	1.1957	15	9.5616	0.9422	1.2721	0.1390
30	+9.4062	−0.9160	−1.0888	+1.1892	16	+9.5623	−0.9406	−1.2726	+0.0099
31	9.4104	0.9186	1.0975	1.1824	17	9.5640	0.9385	1.2730	9.8247
b. 1	9.4135	0.9206	1.1059	1.1754	18	9.5667	0.9364	1.2732	+9.4968
2	9.4162	0.9216	1.1140	1.1681	19	9.5704	0.9346	1.2732	−8.5783
3	9.4189	0.9217	1.1219	1.1606	20	9.5747	0.9335	1.2731	9.5956
$^{\rm h}$ 9.0) 4	+9.4223	−0.9210	−1.1296	+1.1528	$^{\rm h}$ (12.0) 21	+9.5792	−0.9332	−1.2728	−9.8740
5	9.4268	0.9198	1.1370	1.1447	22	9.5837	0.9339	1.2724	0.0421
6	9.4324	0.9185	1.1441	1.1363	23	9.5876	0.9352	1.2719	0.1626
7	9.4390	0.9177	1.1509	1.1276	24	9.5906	0.9368	1.2713	0.2577
8	9.4462	0.9175	1.1575	1.1186	25	9.5927	0.9384	1.2706	0.3338
9	+9.4535	−0.9183	−1.1638	+1.1093	26	+9.5941	−0.9395	−1.2698	−0.3992
10	9.4602	0.9200	1.1698	1.0997	27	9.5949	0.9398	1.2688	0.4558
11	9.4659	0.9225	1.1756	1.0897	28	9.5956	0.9392	1.2676	0.5059
12	9.4703	0.9253	1.1813	1.0793	29	9.5967	0.9377	1.2664	0.5505
13	9.4733	0.9281	1.1868	1.0685	30	9.5983	0.9355	1.2651	0.5909
14	+9.4751	−0.9304	−1.1921	+1.0573	31	+9.6007	−0.9329	−1.2636	−0.6277
15	+9.4761	−0.9319	−1.1971	+1.0458	Apr. 1	+9.6039	−0.9304	−1.2620	−0.6615

E = + 0″.01.

E = + 0″.02.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
Apr. 1	+9.6039	−0.9304	−1.2620	−0.6615	May 17	+9.7262	−0.8825	−1.0009	−1.2377
2	9.6079	0.9283	1.2602	0.6927	18	9.7292	0.8836	0.9891	1.2422
3	9.6123	0.9270	1.2583	0.7217	19	9.7314	0.8845	0.9768	1.2465
h 4	9.6166	0.9266	1.2562	0.7487	h 20	9.7333	0.8848	0.9640	1.2507
(13.0) 5	9.6204	0.9271	1.2540	0.7740	(16.0) 21	9.7348	0.8842	0.9507	1.2548
6	+9.6236	−0.9282	−1.2517	−0.7978	22	+9.7363	−0.8826	−0.9369	−1.2587
7	9.6258	0.9295	1.2492	0.8202	23	9.7382	0.8800	0.9226	1.2624
8	9.6272	0.9305	1.2466	0.8414	24	9.7406	0.8768	0.9077	1.2659
9	9.6278	0.9310	1.2438	0.8614	25	9.7436	0.8735	0.8923	1.2693
10	9.6281	0.9307	1.2409	0.8805	26	9.7471	0.8703	0.8763	1.2726
11	+9.6284	−0.9293	−1.2379	−0.8987	27	+9.7512	−0.8680	−0.8594	−1.2758
12	9.6291	0.9271	1.2347	0.9160	28	9.7554	0.8666	0.8416	1.2788
13	9.6305	0.9243	1.2314	0.9325	29	9.7594	0.8663	0.8228	1.2816
14	9.6329	0.9212	1.2279	0.9482	30	9.7631	0.8670	0.8030	1.2841
15	9.6361	0.9184	1.2242	0.9632	31	9.7661	0.8683	0.7823	1.2865
16	+9.6399	−0.9162	−1.2203	−0.9776	June 1	+9.7685	−0.8698	−0.7604	−1.2889
17	9.6442	0.9148	1.2163	0.9914	2	9.7702	0.8709	0.7372	1.2912
18	9.6485	0.9144	1.2122	1.0047	3	9.7716	0.8712	0.7127	1.2934
h 19	9.6523	0.9148	1.2080	1.0175	h 4	9.7727	0.8706	0.6865	1.2955
(14.0) 20	9.6556	0.9158	1.2036	1.0297	(17.0) 5	9.7739	0.8689	0.6585	1.2974
21	+9.6581	−0.9168	−1.1990	−1.0414	6	+9.7755	−0.8664	−0.6285	−1.2991
22	9.6599	0.9175	1.1942	1.0527	7	9.7776	0.8633	0.5963	1.3007
23	9.6612	0.9175	1.1892	1.0636	8	9.7804	0.8603	0.5611	1.3022
24	9.6623	0.9164	1.1840	1.0742	9	9.7839	0.8577	0.5228	1.3036
25	9.6635	0.9145	1.1786	1.0844	10	9.7877	0.8560	0.4806	1.3049
26	+9.6652	−0.9117	−1.1731	−1.0943	11	+9.7916	−0.8555	−0.4337	−1.3060
27	9.6676	0.9085	1.1674	1.1038	12	9.7954	0.8560	0.3812	1.3070
28	9.6707	0.9052	1.1615	1.1129	13	9.7989	0.8574	0.3222	1.3079
29	9.6745	0.9022	1.1553	1.1217	14	9.8017	0.8593	0.2515	1.3086
30	9.6787	0.9000	1.1489	1.1301	15	9.8040	0.8612	0.1690	1.3092
May 1	+9.6831	−0.8988	−1.1423	−1.1382	16	+9.8060	−0.8625	−0.0647	−1.3097
2	9.6871	0.8985	1.1355	1.1461	17	9.8076	0.8630	9.9280	1.3101
3	9.6906	0.8990	1.1285	1.1538	18	9.8091	0.8625	9.7297	1.3104
4	9.6934	0.8999	1.1213	1.1613	h 19	9.8108	0.8609	−9.3507	1.3106
h 5	9.6954	0.9008	1.1138	1.1685	(18.0) 20	9.8129	0.8586	+8.9284	1.3106
(15.0) 6	+9.6968	−0.9013	−1.1061	−1.1754	21	+9.8155	−0.8559	+9.6014	−1.3105
7	9.6976	0.9009	1.0981	1.1821	22	9.8185	0.8534	9.8522	1.3103
8	9.6985	0.8994	1.0898	1.1886	23	9.8220	0.8516	0.0101	1.3100
9	9.6995	0.8971	1.0812	1.1949	24	9.8257	0.8507	0.1254	1.3095
10	9.7011	0.8940	1.0723	1.2009	25	9.8294	0.8510	0.2164	1.3089
11	+9.7035	−0.8905	−1.0631	−1.2067	26	+9.8327	−0.8524	+0.2915	−1.3082
12	9.7066	0.8871	1.0536	1.2123	27	9.8356	0.8545	0.3554	1.3074
13	9.7103	0.8843	1.0437	1.2177	28	9.8379	0.8570	0.4110	1.3065
14	9.7144	0.8824	1.0335	1.2230	29	9.8396	0.8592	0.4601	1.3054
15	9.7187	0.8816	1.0230	1.2281	30	9.8409	0.8608	0.5042	1.3042
16	+9.7227	−0.8817	−1.0122	−1.2330	July 1	+9.8419	−0.8615	+0.5440	−1.3029
17	+9.7262	−0.8825	−1.0009	−1.2377	2	+9.8430	−0.8610	+0.5804	−1.3015

E = + 0″.02.

FOR WASHINGTON MEAN MIDNIGHT.

olar Day. d. Hour.)		Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)		Log *A*.	Log *B*.	Log *C*.	Log *D*.
ly	1	+9.8419	−0.8615	+0.5440	−1.3029	Aug.	16	+9.9259	−0.8806	+1.1853	−1.0721
	2	9.8430	0.8610	0.5804	1.3015		17	9.9282	0.8801	1.1903	1.0615
	3	9.8443	0.8596	0.6140	1.2999		18	9.9305	0.8805	1.1951	1.0505
h	4	9.8458	0.8576	0.6450	1.2982	h	19	9.9327	0.8821	1.1997	1.0390
19.0)	5	9.8480	0.8554	0.6737	1.2964	(22.0)	20	9.9347	0.8842	1.2042	1.0272
	6	+9.8507	−0.8536	+0.7007	−1.2944		21	+9.9362	−0.8870	+1.2086	−1.0150
	7	9.8538	0.8525	0.7259	1.2923		22	9.9373	0.8899	1.2129	1.0024
	8	9.8570	0.8525	0.7496	1.2901		23	9.9379	0.8923	1.2170	0.9893
	9	9.8603	0.8536	0.7719	1.2878		24	9.9382	0.8940	1.2210	0.9757
	10	9.8632	0.8558	0.7931	1.2853		25	9.9384	0.8946	1.2248	0.9614
	11	+9.8658	−0.8585	+0.8132	−1.2827		26	+9.9386	−0.8943	+1.2284	−0.9464
	12	9.8679	0.8614	0.8322	1.2800		27	9.9390	0.8931	1.2318	0.9307
	13	9.8695	0.8638	0.8504	1.2771		28	9.9398	0.8914	1.2350	0.9143
	14	9.8708	0.8655	0.8677	1.2741		29	9.9411	0.8897	1.2381	0.8970
	15	9.8720	0.8662	0.8843	1.2709		30	9.9427	0.8884	1.2411	0.8790
	16	+9.8731	−0.8658	+0.9002	−1.2676		31	+9.9447	−0.8878	+1.2439	−0.8603
	17	9.8747	0.8645	0.9154	1.2641	Sept.	1	9.9467	0.8883	1.2466	0.8405
	18	9.8765	0.8628	0.9299	1.2605		2	9.9486	0.8897	1.2492	0.8196
	19	9.8788	0.8611	0.9437	1.2568	h	3	9.9503	0.8919	1.2517	0.7974
h	20	9.8816	0.8598	0.9570	1.2529	(23.0)	4	9.9515	0.8944	1.2541	0.7739
0.0)	21	+9.8845	−0.8594	+0.9698	−1.2488		5	+9.9525	−0.8968	+1.2563	−0.7489
	22	9.8875	0.8602	0.9822	1.2446		6	9.9531	0.8987	1.2583	0.7222
	23	9.8903	0.8620	0.9942	1.2402		7	9.9534	0.8997	1.2601	0.6936
	24	9.8928	0.8646	1.0057	1.2357		8	9.9537	0.8997	1.2618	0.6629
	25	9.8947	0.8676	1.0168	1.2310		9	9.9541	0.8986	1.2634	0.6297
	26	+9.8961	−0.8706	+1.0275	−1.2261		10	+9.9549	−0.8968	+1.2649	−0.5935
	27	9.8971	0.8731	1.0378	1.2210		11	9.9560	0.8947	1.2663	0.5540
	28	9.8977	0.8747	1.0478	1.2157		12	9.9575	0.8927	1.2676	0.5102
	29	9.8983	0.8752	1.0574	1.2101		13	9.9592	0.8912	1.2687	0.4615
	30	9.8990	0.8745	1.0667	1.2044		14	9.9612	0.8906	1.2697	0.4064
	31	+9.9001	−0.8734	+1.0757	−1.1985		15	+9.9631	−0.8909	+1.2706	−0.3430
g.	1	9.9016	0.8719	1.0844	1.1924		16	9.9648	0.8922	1.2713	0.2687
	2	9.9034	0.8705	1.0928	1.1862		17	9.9662	0.8940	1.2719	0.1788
	3	9.9057	0.8697	1.1009	1.1798		18	9.9672	0.8961	1.2724	0.0648
h	4	9.9082	0.8698	1.1087	1.1732	h	19	9.9677	0.8980	1.2728	9.9097
1.0)	5	+9.9108	−0.8710	+1.1163	−1.1663	(0.0)	20	+9.9679	−0.8991	+1.2730	−9.6656
	6	9.9132	0.8732	1.1237	1.1591		21	9.9678	0.8993	1.2731	−9.0530
	7	9.9152	0.8761	1.1309	1.1516		22	9.9679	0.8984	1.2731	+9.3716
	8	9.9168	0.8792	1.1377	1.1439		23	9.9681	0.8966	1.2730	9.7673
	9	9.9179	0.8820	1.1443	1.1359		24	9.9687	0.8942	1.2727	9.9708
	10	+9.9189	−0.8842	+1.1507	−1.1276		25	+9.9696	−0.8916	+1.2723	+0.1093
	11	9.9194	0.8854	1.1569	1.1191		26	9.9709	0.8892	1.2718	0.2134
	12	9.9202	0.8856	1.1629	1.1103		27	9.9725	0.8875	1.2711	0.2975
	13	9.9211	0.8849	1.1688	1.1012		28	9.9743	0.8867	1.2703	0.3679
	14	9.9224	0.8835	1.1745	1.0919		29	9.9761	0.8869	1.2694	0.4284
	15	+9.9240	−0.8819	+1.1800	−1.0822		30	+9.9777	−0.8879	+1.2683	+0.4814
	16	+9.9259	−0.8806	+1.1853	−1.0721	Oct.	1	+9.9789	−0.8894	+1.2671	+0.5285

E = + 0″.03.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
Oct. 1	+9.9789	−0.8894	+1.2671	+0.5285	Nov. 16	+0.0295	−0.8368	+1.0273	+1.2261
2	9.9798	0.8910	1.2658	0.5708	17	0.0303	0.8334	1.0161	1.2312
3	9.9804	0.8922	1.2644	0.6093	h 18	0.0313	0.8293	1.0044	1.2361
h 4	9.9808	0.8925	1.2629	0.6446	(4.0) 19	0.0328	0.8253	0.9921	1.2409
(1.0) 5	9.9811	0.8919	1.2612	0.6772	20	0.0345	0.8218	0.9793	1.2456
6	+9.9816	−0.8901	+1.2593	+0.7074	21	+0.0365	−0.8193	+0.9660	+1.2501
7	9.9821	0.8876	1.2572	0.7355	22	0.0386	0.8179	0.9522	1.2544
8	9.9831	0.8845	1.2550	0.7618	23	0.0406	0.8178	0.9377	1.2585
9	9.9844	0.8814	1.2527	0.7864	24	0.0424	0.8185	0.9226	1.2624
10	9.9860	0.8787	1.2503	0.8097	25	0.0440	0.8198	0.9069	1.2661
11	+9.9879	−0.8767	+1.2478	+0.8316	26	+0.0452	−0.8210	+0.8906	+1.2697
12	9.9898	0.8758	1.2451	0.8524	27	0.0462	0.8216	0.8736	1.2731
13	9.9916	0.8759	1.2423	0.8722	28	0.0470	0.8212	0.8555	1.2763
14	9.9931	0.8767	1.2393	0.8910	29	0.0478	0.8197	0.8363	1.2794
15	9.9943	0.8779	1.2361	0.9089	30	0.0488	0.8170	0.8161	1.2824
16	+9.9950	−0.8790	+1.2327	+0.9259	Dec. 1	+0.0500	−0.8135	+0.7948	+1.2852
17	9.9954	0.8795	1.2292	0.9420	2	0.0515	0.8096	0.7723	1.2878
18	9.9956	0.8791	1.2256	0.9575	3	0.0533	0.8059	0.7486	1.2902
h 19	9.9958	0.8777	1.2218	0.9724	h 4	0.0553	0.8030	0.7232	1.2925
(2.0) 20	9.9961	0.8752	1.2178	0.9867	(5.0) 5	0.0575	0.8012	0.6961	1.2947
21	+9.9966	−0.8720	+1.2136	+1.0004	6	+0.0597	−0.8007	+0.6670	+1.2968
22	9.9975	0.8683	1.2093	1.0136	7	0.0617	0.8014	0.6357	1.2987
23	9.9988	0.8648	1.2048	1.0263	8	0.0635	0.8029	0.6018	1.3004
24	0.0005	0.8619	1.2001	1.0385	9	0.0649	0.8048	0.5649	1.3020
25	0.0023	0.8599	1.1952	1.0503	10	0.0659	0.8064	0.5244	1.3035
26	+0.0042	−0.8589	+1.1901	+1.0616	11	+0.0668	−0.8072	+0.4796	+1.3049
27	0.0060	0.8590	1.1848	1.0724	12	0.0674	0.8069	0.4295	1.3061
28	0.0075	0.8597	1.1793	1.0828	13	0.0681	0.8054	0.3725	1.3070
29	0.0088	0.8607	1.1736	1.0929	14	0.0689	0.8029	0.3069	1.3080
30	0.0097	0.8614	1.1677	1.1027	15	0.0700	0.7997	0.2295	1.3088
31	+0.0103	−0.8615	+1.1616	+1.1122	16	+0.0714	−0.7963	+0.1349	+1.3094
Nov. 1	0.0109	0.8605	1.1554	1.1214	17	0.0731	0.7933	0.0135	1.3099
2	0.0115	0.8584	1.1490	1.1303	18	0.0750	0.7913	9.8442	1.3102
h 3	0.0122	0.8553	1.1423	1.1389	h 19	0.0771	0.7905	9.5628	1.3104
(8.0) 4	0.0132	0.8515	1.1352	1.1471	(6.0) 20	0.0791	0.7911	+8.4645	1.3105
5	+0.0147	−0.8475	+1.1278	+1.1549	21	+0.0809	−0.7928	−9.4790	+1.3105
6	0.0165	0.8438	1.1201	1.1625	22	0.0825	0.7952	9.8028	1.3104
7	0.0185	0.8409	1.1122	1.1698	23	0.0839	0.7976	9.9861	1.3101
8	0.0206	0.8391	1.1040	1.1769	24	0.0850	0.7997	0.1145	1.3096
9	0.0226	0.8384	1.0956	1.1838	25	0.0858	0.8008	0.2132	1.3090
10	+0.0245	−0.8387	+1.0869	+1.1905	26	+0.0867	−0.8008	−0.2936	+1.3082
11	0.0260	0.8395	1.0779	1.1971	27	0.0876	0.7995	0.3612	1.3073
12	0.0271	0.8405	1.0685	1.2034	28	0.0886	0.7973	0.4197	1.3063
13	0.0279	0.8411	1.0588	1.2094	29	0.0900	0.7946	0.4710	1.3051
14	0.0285	0.8407	1.0487	1.2152	30	0.0916	0.7919	0.5168	1.3038
15	+0.0290	−0.8393	+1.0382	+1.2208	31	+0.0934	−0.7899	−0.5581	+1.3024
16	+0.0295	−0.8368	+1.0273	+1.2261	32	+0.0954	−0.7889	−0.5957	+1.3008

E = + 0″.03.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			°	
Jan. 0	0.0010	+ 6.68	+0.445	290 25	19 21.7	350 30	23 22.0	+0.9205	+1.3095	−1.46	−0.1646
1	0.0037	6.92	0.461	291 0	19 24.0	349 34	23 18.3	0.9241	1.3093	1.60	0.2049
2	0.0064	7.14	0.476	291 28	19 25.9	348 38	23 14.5	0.9280	1.3091	1.75	0.2418
3	0.0092	7.31	0.487	291 50	19 27.3	347 41	23 10.7	0.9315	1.3088	1.89	0.2756
4	0.0119	7.44	0.496	292 6	19 28.4	346 44	23 6.9	0.9343	1.3085	2.03	0.3067
(^{h}7.0) 5	0.0147	+ 7.55	+0.503	292 20	19 29.3	345 47	23 3.1	+0.9363	+1.3082	−2.17	−0.3357
6	0.0174	7.66	0.511	292 37	19 30.5	344 50	22 59.3	0.9374	1.3079	2.31	0.3628
7	0.0201	7.77	0.518	292 57	19 31.8	343 53	22 55.5	0.9378	1.3076	2.45	0.3882
8	0.0229	7.91	0.527	293 23	19 33.5	342 56	22 51.7	0.9378	1.3072	2.59	0.4119
9	0.0256	8.08	0.539	293 55	19 35.7	341 59	22 47.9	0.9379	1.3068	2.73	0.4344
10	0.0284	+ 8.29	+0.553	294 32	19 38.1	341 2	22 44.1	+0.9385	+1.3064	−2.86	−0.4556
11	0.0311	8.53	0.569	295 12	19 40.8	340 5	22 40.3	0.9397	1.3060	2.99	0.4756
12	0.0338	8.78	0.585	295 51	19 43.4	339 8	22 36.5	0.9420	1.3056	3.13	0.4947
13	0.0366	9.03	0.602	296 27	19 45.8	338 10	22 32.7	0.9451	1.3052	3.26	0.5129
14	0.0393	9.26	0.617	296 57	19 47.8	337 13	22 28.9	0.9488	1.3047	3.39	0.5301
15	0.0421	+ 9.47	+0.631	297 18	19 49.2	336 15	22 25.0	+0.9528	+1.3042	−3.52	−0.5466
16	0.0448	9.63	0.642	297 33	19 50.2	335 17	22 21.1	0.9567	1.3037	3.65	0.5623
17	0.0475	9.74	0.649	297 42	19 50.8	334 19	22 17.3	0.9599	1.3032	3.78	0.5773
18	0.0503	9.83	0.655	297 47	19 51.1	333 21	22 13.4	0.9623	1.3027	3.91	0.5917
19	0.0530	9.90	0.660	297 53	19 51.5	332 23	22 9.5	0.9641	1.3021	4.04	0.6055
(^{h}8.0) 20	0.0558	+ 9.96	+0.664	298 1	19 52.1	331 25	22 5.6	+0.9648	+1.3015	−4.16	−0.6187
21	0.0585	10.05	0.670	298 15	19 53.0	330 26	22 1.7	0.9652	1.3010	4.28	0.6314
22	0.0612	10.16	0.677	298 34	19 54.3	329 27	21 57.8	0.9653	1.3004	4.40	0.6436
23	0.0640	10.31	0.687	299 1	19 56.0	328 28	21 53.9	0.9657	1.2998	4.52	0.6554
24	0.0667	10.50	0.700	299 31	19 58.0	327 29	21 49.9	0.9668	1.2992	4.64	0.6668
25	0.0695	+10.72	+0.715	300 3	20 0.2	326 30	21 46.0	+0.9686	+1.2986	−4.76	−0.6777
26	0.0722	10.96	0.731	300 35	20 2.3	325 31	21 42.1	0.9715	1.2980	4.88	0.6882
27	0.0749	11.19	0.746	301 2	20 4.1	324 31	21 38.1	0.9750	1.2974	4.99	0.6984
28	0.0777	11.42	0.761	301 24	20 5.6	323 31	21 34.1	0.9790	1.2968	5.10	0.7082
29	0.0804	11.60	0.773	301 39	20 6.6	322 32	21 30.1	0.9829	1.2962	5.21	0.7176
30	0.0832	+11.75	+0.783	301 48	20 7.2	321 32	21 26.1	+0.9866	+1.2955	−5.32	0.7266
31	0.0859	11.87	0.791	301 54	20 7.6	320 32	21 22.1	0.9897	1.2948	5.43	0.7352
Feb. 1	0.0886	11.96	0.797	301 57	20 7.8	319 32	21 18.1	0.9919	1.2941	5.54	0.7435
2	0.0914	12.05	0.803	302 4	20 8.3	318 31	21 14.1	0.9935	1.2935	5.64	0.7516
3	0.0941	12.11	0.807	302 13	20 8.9	317 31	21 10.1	0.9943	1.2928	5.74	0.7595
(^{h}9.0) 4	0.0969	+12.21	+0.814	302 28	20 9.9	316 31	21 6.1	+0.9948	+1.2922	−5.84	−0.7671
5	0.0996	12.33	0.822	302 48	20 11.2	315 30	21 2.0	0.9952	1.2915	5.94	0.7745
6	0.1023	12.49	0.833	303 13	20 12.8	314 29	20 57.9	0.9960	1.2908	6.04	0.7816
7	0.1051	12.68	0.845	303 40	20 14.7	313 28	20 53.9	0.9974	1.2902	6.14	0.7884
8	0.1078	12.90	0.860	304 7	20 16.5	312 27	20 49.8	0.9995	1.2895	6.23	0.7950
9	0.1106	+13.11	+0.874	304 31	20 18.1	311 26	20 45.7	+1.0024	+1.2889	−6.32	0.8013
10	0.1133	13.32	0.888	304 49	20 19.3	310 24	20 41.6	1.0056	1.2882	6.41	0.8073
11	0.1160	13.49	0.899	305 1	20 20.1	309 22	20 37.5	1.0092	1.2876	6.50	0.8131
12	0.1187	13.63	0.909	305 7	20 20.5	308 20	20 33.3	1.0126	1.2869	6.58	0.8187
13	0.1215	13.73	0.915	305 8	20 20 5	307 18	20 29.2	1.0155	1.2863	6.66	0.8241
14	0.1242	+13.78	+0.919	305 6	20 20.4	306 16	20 25.1	+1.0176	+1.2856	−6.74	−0.8292
15	0.1269	+13.81	+0.921	305 4	20 20.3	305 13	20 20 9	+1.0189	+1.2850	6.82	0.8341

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	*f*		*G*		*H'*		Log *g*.	Log *h*.	*i*	Log *i*.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	° '	h m	° '	h m			°	
Feb. 15	0.1269	+13.81	+0.921	305 4	20 20.3	305 13	20 20.9	+1.0189	+1.2850	−6.82	−0.8341
16	0.1296	13.84	0.923	305 5	20 20.3	304 10	20 16.7	1.0196	1.2844	6.90	0.8389
17	0.1324	13.87	0.925	305 10	20 20.7	303 7	20 12.5	1.0197	1.2838	6.98	0.8436
h 18	0.1351	13.93	0.929	305 21	20 21.4	302 4	20 8.3	1.0197	1.2832	7.05	0.8482
(10.0) 19	0.1379	14.03	0.935	205 38	20 22.5	301 1	20 4.1	1.0198	1.2826	7.12	0.8526
20	0.1406	+14.17	+0.945	305 59	20 23.9	299 58	19 59.9	+1.0205	+1.2820	−7.19	−0.8569
21	0.1433	14.34	0.956	306 22	20 25.5	298 55	19 55.7	1.0218	1.2814	7.26	0.8611
22	0.1461	14.54	0.969	306 44	20 26.9	297 52	19 51.5	1.0237	1.2809	7.32	0.8650
23	0.1488	14.74	0.983	307 3	20 28.2	296 48	19 47.2	1.0264	1.2803	7.38	0.8686
24	0.1516	14.93	0.995	307 17	20 29.1	295 45	19 43.0	1.0296	1.2798	7.44	0.8719
25	0.1543	+15.09	+1.006	307 26	20 29.7	294 41	19 38.7	+1.0328	+1.2793	−7.50	−0.8750
26	0.1570	15.21	1.014	307 31	20 30.1	293 37	19 34.5	1.0357	1.2788	7.55	0.8780
27	0.1598	15.31	1.021	307 31	20 30.1	292 33	19 30.2	1.0381	1.2784	7.60	0.8809
28	0.1625	15.37	1.025	307 31	20 30.1	291 29	19 25.9	1.0398	1.2779	7.65	0.8837
29	0.1653	15.40	1.027	307 32	20 30.1	290 25	19 21.7	1.0408	1.2775	7.70	0.8865
Mar. 1	0.1680	+15.44	+1.029	307 36	20 30.4	289 20	19 17.3	+1.0412	+1.2771	−7.75	−0.8892
2	0.1707	15.49	1.033	307 45	20 30.9	288 16	19 13.1	1.0412	1.2767	7.79	0.8917
3	0.1735	15.57	1.038	308 0	20 32.0	287 11	19 8.8	1.0412	1.2763	7.83	0.8940
4	0.1762	15.69	1.046	308 19	20 33.3	286 7	19 4.5	1.0414	1.2759	7.87	0.8961
h 5	0.1790	15.84	1.056	308 41	20 34.7	285 2	19 0.1	1.0421	1.2755	7.91	0.8980
(11.0) 6	0.1817	+16.02	+1.068	309 3	20 36.2	283 57	18 55.8	+1.0433	+1.2752	−7.94	−0.8996
7	0.1844	16.21	1.081	309 23	20 37.5	282 53	18 51.5	1.0453	1.2749	7.97	0.9012
8	0.1872	16.39	1.093	309 39	20 38.6	281 48	18 47.2	1.0477	1.2746	7.99	0.9027
9	0.1899	16.55	1.103	309 49	20 39.3	280 43	18 42.9	1.0504	1.2744	8.01	0.9041
10	0.1927	16.67	1.111	309 54	20 39.7	279 38	18 38.5	1.0529	1.2742	8.03	0.9054
11	0.1954	+16.75	+1.117	309 54	20 39.7	278 33	18 34.2	+1.0550	+1.2739	−8.05	−0.9065
12	0.1981	16.80	1.120	309 51	20 39.4	277 28	18 29.9	1.0565	1.2737	8.07	0.9074
13	0.2009	16.81	1.121	309 48	20 39.2	276 23	18 25.5	1.0573	1.2735	8.09	0.9082
14	0.2036	16.81	1.121	309 48	20 39.2	275 18	18 21.2	1.0574	1.2734	8.11	0.9089
15	0.2064	16.82	1.121	309 51	20 39.4	274 13	18 16.9	1.0570	1.2733	8.12	0.9095
16	0.2091	+16.85	+1.123	310 0	20 40.0	273 8	18 12.5	+1.0564	+1.2732	−8.13	−0.9100
17	0.2118	16.91	1.127	310 15	20 41.0	272 3	18 8.2	1.0559	1.2732	8.13	0.9104
18	0.2146	17.01	1.134	310 34	20 42.3	270 58	18 3.9	1.0558	1.2732	8.13	0.9106
19	0.2173	17.16	1.144	310 55	20 43.7	269 53	17 59.5	1.0563	1.2732	8.13	0.9106
h 20	0.2201	17.33	1.155	311 17	20 45.1	268 48	17 55.2	1.0576	1.2732	8.13	0.9105
(12.0) 21	0.2228	+17.51	+1.167	311 37	20 46.4	267 43	17 50.9	+1.0595	+1.2732	−8.13	−0.9103
22	0.2255	17.69	1.179	311 50	20 47.3	266 38	17 46.5	1.0617	1.2733	8.12	0.9100
23	0.2283	17.85	1.190	312 1	20 48.1	265 33	17 42.2	1.0642	1.2734	8.11	0.9096
24	0.2310	17.98	1.199	312 6	20 48.4	264 28	17 37.9	1.0664	1.2735	8.10	0.9090
25	0.2338	18.06	1.204	312 8	20 48.5	263 23	17 33.6	1.0682	1.2736	8.09	0.9082
26	0.2365	+18.12	+1.208	312 9	20 48.6	262 19	17 29.3	+1.0695	+1.2737	−8.07	−0.9073
27	0.2392	18.15	1.210	312 11	20 48.7	261 15	17 25.0	1.0700	1.2739	8.05	0.9063
28	0.2419	18.19	1.213	312 16	20 49.1	260 11	17 20.7	1.0700	1.2741	8.03	0.9052
29	0.2447	18.23	1.215	312 27	20 49.8	259 7	17 16.5	1.0697	1.2743	8.01	0.9039
30	0.2474	18.30	1.220	312 42	20 50.8	258 3	17 12.2	1.0693	1.2746	7.99	0.9025
31	0.2501	+18.40	+1.227	313 1	20 52.1	256 59	17 7.9	+1.0689	+1.2749	−7.96	−0.9010
Apr. 1	0.2528	+18.53	+1.235	313 24	20 53.6	255 55	17 3.7	+1.0691	+1.2752	−7.93	−0.8993

FOR WASHINGTON MEAN MIDNIGHT.

lar Day. L Hour.)	τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	° ′	h m	° ′	h m			"	
r. 1	0.2528	+18.53	+1.235	313 24	20 53.6	255 55	17 3.7	+1.0691	+1.2752	−7.93	−0.8993
2	0.2556	18.70	1.247	313 48	20 55.2	254 51	16 59.4	1.0699	1.2755	7.90	0.8975
3	0.2583	18.90	1.260	314 11	20 56.7	253 47	16 55.1	1.0714	1.2758	7.86	0.8956
h 4	0.2611	19.08	1.272	314 29	20 57.9	252 43	16 50.9	1.0732	1.2762	7.82	0.8936
3.0) 5	0.2638	19.25	1.283	314 42	20 58.8	251 40	16 46.7	1.0754	1.2766	7.78	0.8914
6	0.2665	+19.39	+1.293	314 51	20 59.4	250 37	16 42.5	+1.0776	+1.2770	−7.74	−0.8891
7	0.2693	19.49	1.299	314 54	20 59.6	249 34	16 38.3	1.0793	1.2774	7.70	0.8866
8	0.2720	19.55	1.303	314 56	20 59.7	248 31	16 34.1	1.0804	1.2778	7.66	0.8840
9	0.2748	19.58	1.305	314 56	20 59.7	247 28	16 29.9	1.0810	1.2783	7.61	0.8812
10	0.2775	19.60	1.307	314 59	20 59.9	246 26	16 25.7	1.0811	1.2788	7.56	0.8783
11	0.2802	+19.61	+1.307	315 5	21 0.3	245 24	16 21.6	+1.0805	+1.2793	−7.50	−0.8752
12	0.2830	19.64	1.309	315 17	21 1.1	244 22	16 17.5	1.0797	1.2798	7.44	0.8720
13	0.2857	19.71	1.314	315 33	21 2.2	243 20	16 13.3	1.0791	1.2803	7.38	0.8687
14	0.2885	19.81	1.321	315 55	21 3.7	242 18	16 9.2	1.0788	1.2808	7.32	0.8652
15	0.2912	19.96	1.331	316 19	21 5.3	241 16	16 5.1	1.0791	1.2813	7.26	0.8616
16	0.2939	+20.12	+1.342	316 42	21 6.8	240 15	16 1.0	+1.0801	+1.2819	−7.20	−0.8579
17	0.2967	20.33	1.355	317 5	21 8.3	239 14	15 56.9	1.0817	1.2824	7.14	0.8540
18	0.2994	20.53	1.369	317 23	21 9.5	238 13	15 52.9	1.0839	1.2830	7.07	0.8499
h 19	0.3022	20.72	1.381	317 37	21 10.5	237 12	15 48.8	1.0861	1.2835	7.00	0.8456
.0) 20	0.3049	20.87	1.391	317 46	21 11.1	236 11	15 44.7	1.0883	1.2841	6.93	0.8410
21	0.3076	+20.99	+1.399	317 52	21 11.5	235 11	15 40.7	+1.0901	+1.2847	−6.86	−0.8362
22	0.3104	21.08	1.405	317 56	21 11.7	234 10	15 36.7	1.0915	1.2853	6.79	0.8313
23	0.3131	21.14	1.409	318 1	21 12.1	233 10	15 32.7	1.0922	1.2859	6.71	0.8263
24	0.3159	21.19	1.413	318 10	21 12.7	232 10	15 28.7	1.0923	1.2865	6.63	0.8212
25	0.3186	21.25	1.417	318 22	21 13.5	231 10	15 24.7	1.0921	1.2872	6.55	0.8160
26	0.3213	+21.34	+1.423	318 40	21 14.7	230 11	15 20.7	+1.0918	+1.2878	−6.47	−0.8106
27	0.3241	21.46	1.431	319 2	21 16.1	229 12	15 16.8	1.0918	1.2884	6.38	0.8049
28	0.3268	21.61	1.441	319 27	21 17.8	228 13	15 12.9	1.0922	1.2890	6.29	0.7990
29	0.3296	21.80	1.453	319 53	21 19.5	227 14	15 8.9	1.0932	1.2897	6.20	0.7928
30	0.3323	22.02	1.468	320 18	21 21.2	226 15	15 5.0	1.0948	1.2903	6.11	0.7863
y 1	0.3350	+22.24	+1.483	320 40	21 22.7	225 16	15 1.1	+1.0968	+1.2909	−6.02	−0.7796
2	0.3378	22.45	1.497	320 57	21 23.8	224 18	14 57.2	1.0991	1.2916	5.93	0.7728
3	0.3405	22.62	1.508	321 8	21 24.5	223 20	14 53.3	1.1015	1.2922	5.84	0.7658
4	0.3433	22.77	1.518	321 16	21 25.1	222 22	14 49.5	1.1035	1.2929	5.74	0.7586
h 5	0.3460	22.88	1.525	321 20	21 25.3	221 24	14 45.6	1.1051	1.2935	5.64	0.7512
.0) 6	0.3487	+22.95	+1.530	321 23	21 25.5	220 26	14 41.7	+1.1062	+1.2941	−5.54	−0.7435
7	0.3515	22.99	1.533	321 28	21 25.9	219 29	14 37.9	1.1065	1.2948	5.44	0.7355
8	0.3542	23.04	1.536	321 37	21 26.5	218 32	14 34.1	1.1064	1.2954	5.34	0.7272
9	0.3570	23.10	1.540	321 50	21 27.3	217 35	14 30.3	1.1062	1.2960	5.23	0.7186
10	0.3597	23.18	1.545	322 8	21 28.5	216 38	14 26.5	1.1060	1.2966	5.12	0.7097
11	0.3624	+23.31	+1.554	322 31	21 30.1	215 41	14 22.7	+1.1061	+1.2972	−5.02	−0.7005
12	0.3652	23.47	1.565	322 56	21 31.7	214 45	14 19.0	1.1068	1.2978	4.91	0.6910
13	0.3679	23.67	1.578	323 20	21 33.3	213 49	14 15.3	1.1082	1.2984	4.80	0.6811
14	0.3707	23.90	1.593	323 43	21 34.9	212 53	14 11.5	1.1102	1.2990	4.69	0.6709
15	0.3734	24.14	1.609	324 2	21 36.1	211 57	14 7.8	1.1128	1.2995	4.58	0.6604
16	0.3761	+24.36	+1.624	324 17	21 37.1	211 1	14 4.1	+1.1154	+1.3001	−4.47	−0.6495
17	0.3788	+24.56	+1.637	324 27	21 37.8	210 6	14 0.4	+1.1180	+1.3006	−4.35	−0.6382

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
May	17	0.3788	+24.56	+1.637	324 27	21 37.8	210 6	14 0.4	+1.1180	+1.3006	−4.35	−0.6382
	18	0.3816	24.73	1.649	324 34	21 38.3	209 10	13 56.7	1.1204	1.3012	4.23	0.6264
	19	0.3843	24.85	1.657	324 39	21 38.6	208 15	13 53.0	1.1221	1.3017	4.11	0.6142
h	20	0.3870	24.96	1.664	324 45	21 39.0	207 20	13 49.3	1.1235	1.3022	3.99	0.6015
(16.0)	21	0.3897	25.04	1.669	324 53	21 39.5	206 25	13 45.7	1.1243	1.3027	3.87	0.5883
	22	0.3925	+25.13	+1.675	325 4	21 40.3	205 30	13 42.0	+1.1249	+1.3032	−3.75	−0.5746
	23	0.3952	25.24	1.683	325 21	21 41.4	204 36	13 38.4	1.1252	1.3037	3.63	0.5603
	24	0.3980	25.38	1.692	325 42	21 42.8	203 41	13 34.7	1.1258	1.3042	3.51	0.5454
	25	0.4007	25.56	1.704	326 5	21 44.3	202 47	13 31.1	1.1268	1.3046	3.39	0.5299
	26	0.4034	25.76	1.717	326 29	21 45.9	201 53	13 27.5	1.1283	1.3050	3.27	0.5138
	27	0.4062	+26.01	+1.734	326 52	21 47.5	200 59	13 23.9	+1.1305	+1.3054	−3.15	−0.4968
	28	0.4089	26.26	1.751	327 13	21 48.9	200 5	13 20.3	1.1330	1.3058	3.02	0.4789
	29	0.4117	26.51	1.767	327 28	21 49.9	199 11	13 16.7	1.1357	1.3062	2.89	0.4601
	30	0.4144	26.73	1.782	327 39	21 50.6	198 17	13 13.1	1.1386	1.3066	2.76	0.4404
	31	0.4171	26.92	1.795	327 45	21 51.0	197 23	13 9.5	1.1411	1.3070	2.63	0.4197
June	1	0.4199	+27.07	+1.805	327 48	21 51.2	196 30	13 6.0	+1.1432	+1.3073	−2.50	−0.3979
	2	0.4226	27.17	1.811	327 50	21 51.3	195 36	13 2.4	1.1448	1.3077	2.37	0.3747
	3	0.4254	27.26	1.817	327 54	21 51.6	194 43	12 58.9	1.1459	1.3080	2.24	0.3502
h	4	0.4281	27.33	1.822	328 0	21 52.0	193 50	12 55.3	1.1465	1.3084	2.11	0.3238
(17.0)	5	0.4308	27.40	1.827	328 11	21 52.7	192 56	12 51.7	1.1468	1.3087	1.98	0.2959
	6	0.4336	+27.49	+1.833	328 25	21 53.7	192 3	12 48.2	+1.1473	+1.3089	−1.85	−0.2659
	7	0.4363	27.64	1.843	328 43	21 54.9	191 10	12 44.7	1.1480	1.3091	1.72	0.2335
	8	0.4391	27.82	1.855	329 4	21 56.3	190 17	12 41.1	1.1492	1.3093	1.59	0.1984
	9	0.4418	28.04	1.869	329 25	21 57.7	189 24	12 37.6	1.1511	1.3095	1.45	0.1602
	10	0.4445	28.30	1.887	329 44	21 58.9	188 31	12 34.1	1.1535	1.3097	1.31	0.1182
	11	0.4473	+28.54	+1.903	329 59	21 59.9	187 39	12 30.6	+1.1563	+1.3099	−1.18	−0.0713
	12	0.4500	28.79	1.919	330 10	22 0.7	186 46	12 27.1	1.1593	1.3100	1.04	0.0188
	13	0.4528	29.02	1.935	330 18	22 1.2	185 53	12 23.5	1.1623	1.3101	0.91	9.9588
	14	0.4555	29.21	1.947	330 21	22 1.4	185 1	12 20.0	1.1649	1.3103	0.77	9.8893
	15	0.4582	29.37	1.958	330 22	22 1.5	184 8	12 16.5	1.1671	1.3104	0.64	9.8055
	16	0.4610	+29.50	+1.967	330 24	22 1.6	183 16	12 13.1	+1.1689	+1.3104	−0.50	−9.7025
	17	0.4637	29.61	1.974	330 28	22 1.9	182 23	12 9.5	1.1703	1.3105	0.37	9.5674
	18	0.4665	29.72	1.981	330 35	22 2.3	181 31	12 6.1	1.1713	1.3105	0.23	9.3720
b	19	0.4692	29.84	1.989	330 46	22 3.1	180 38	12 2.5	1.1722	1.3106	−0.10	−8.9952
(18.0)	20	0.4719	29.97	1.998	331 1	22 4.1	179 45	11 59.0	1.1732	1.3106	+0.04	+8.5635
	21	0.4747	+30.16	+2.011	331 19	22 5.3	178 53	11 55.5	+1.1746	+1.3106	+0.17	+9.2357
	22	0.4774	30.37	2.025	331 37	22 6.5	178 0	11 52.0	1.1763	1.3105	0.31	9.4878
	23	0.4802	30.61	2.041	331 54	22 7.6	177 8	11 48.5	1.1787	1.3105	0.44	9.6462
	24	0.4829	30.87	2.058	332 9	22 8.6	176 15	11 45.0	1.1814	1.3104	0.58	9.7629
	25	0.4856	31.14	2.076	332 20	22 9.3	175 22	11 41.5	1.1843	1.3103	0.71	9.8539
	26	0.4884	+31.37	+2.091	332 27	22 9.8	174 30	11 38.0	+1.1872	+1.3102	+0.85	+9.9290
	27	0.4911	31.58	2.105	332 29	22 9.9	173 37	11 34.5	1.1899	1.3101	0.98	9.9929
	28	0.4939	31.76	2.117	332 28	22 9.9	172 45	11 31.0	1.1922	1.3100	1.12	0.0486
	29	0.4966	31.88	2.125	332 27	22 9.8	171 52	11 27.5	1.1940	1.3098	1.25	0.0977
	30	0.4993	31.98	2.132	332 26	22 9.7	170 59	11 23.9	1.1954	1.3096	1.39	0.1417
July	1	0.5020	+32.06	+2.137	332 27	22 9.8	170 7	11 20.5	+1.1964	+1.3094	+1.52	+0.1815
	2	0.5048	+32.13	+2.142	332 32	22 10.1	169 14	11 16.9	+1.1971	+1.3092	+1.65	+0.2179

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
			In Arc.	In Time.	In Arc.	In Time	In Arc.	In Time.				
		y	"	s	° '	h m	° '	h m			"	s
July	1	0.5020	+32.06	+2.137	332 27	22 9.8	170 7	11 20.5	+1.1964	+1.3094	+1.52	+0.1815
	2	0.5048	32.13	2.142	332 32	22 10.1	169 14	11 16.9	1.1971	1.3092	1.65	0.2179
	3	0.5075	32.23	2.149	332 41	22 10.7	168 22	11 13.5	1.1978	1.3089	1.78	0.2514
h	4	0.5102	32.34	2.156	332 52	22 11.5	167 29	11 9.9	1.1986	1.3086	1.91	0.2824
(19.0)	5	0.5129	32.51	2.167	333 6	22 12.4	166 36	11 6.4	1.1999	1.3083	2.05	0.3113
	6	0.5157	+32.72	+2.181	333 20	22 13.3	165 43	11 2.9	+1.2017	+1.3080	+2.18	+0.3382
	7	0.5184	32.95	2.197	333 34	22 14.2	164 50	10 59.3	1.2039	1.3077	2.31	0.3634
	8	0.5212	33.19	2.212	333 44	22 14.9	163 57	10 55.8	1.2065	1.3074	2.44	0.3870
	9	0.5239	33.46	2.231	333 51	22 15.4	163 3	10 52.2	1.2094	1.3070	2.57	0.4094
	10	0.5266	33.69	2.246	333 53	22 15.5	162 10	10 48.7	1.2122	1.3067	2.70	0.4306
	11	0.5294	+33.87	+2.258	333 53	22 15.5	161 16	10 45.1	+1.2148	+1.3063	+2.83	+0.4507
	12	0.5321	34.03	2.269	333 50	22 15.3	160 23	10 41.5	1.2171	1.3059	2.96	0.4698
	13	0.5349	34.16	2.277	333 48	22 15.2	159 29	10 37.9	1.2188	1.3055	3.08	0.4878
	14	0.5376	34.27	2.285	333 46	22 15.1	158 35	10 34.3	1.2202	1.3051	3.20	0.5052
	15	0.5403	34.36	2.291	333 48	22 15.2	157 41	10 30.7	1.2213	1.3047	3.33	0.5218
	16	0.5431	+34.45	+2.297	333 53	22 15.5	156 47	10 27.1	+1.2221	+1.3043	+3.45	+0.5377
	17	0.5458	34.56	2.304	334 2	22 16.1	155 53	10 23.5	1.2231	1.3038	3.57	0.5529
	18	0.5486	34.71	2.314	334 13	22 16.9	154 59	10 19.9	1.2242	1.3033	3.69	0.5674
	19	0.5513	34.89	2.326	334 25	22 17.7	154 4	10 16.3	1.2258	1.3028	3.81	0.5811
h	20	0.5540	35.13	2.342	334 38	22 18.5	153 10	10 12.7	1.2278	1.3023	3.93	0.5944
(20.0)	21	0.5568	+35.36	+2.357	334 48	22 19.2	152 15	10 9.0	+1.2302	+1.3018	+4.05	+0.6073
	22	0.5595	35.60	2.373	334 54	22 19.6	151 20	10 5.3	1.2328	1.3013	4.17	0.6197
	23	0.5623	35.83	2.389	334 57	22 19.8	150 25	10 1.7	1.2354	1.3008	4.29	0.6316
	24	0.5650	36.03	2.402	334 57	22 19.8	149 30	9 58.0	1.2379	1.3002	4.40	0.6431
	25	0.5677	36.20	2.413	334 54	22 19.6	148 35	9 54.3	1.2400	1.2997	4.51	0.6541
	26	0.5705	+36.31	+2.421	334 49	22 19.3	147 39	9 50.6	+1.2417	+1.2991	+4.62	+0.6648
	27	0.5732	36.40	2.427	334 44	22 18.9	146 44	9 46.9	1.2430	1.2985	4.73	0.6752
	28	0.5760	36.45	2.430	334 41	22 18.7	145 48	9 43.2	1.2438	1.2979	4.84	0.6852
	29	0.5787	36.50	2.433	334 42	22 18.8	144 53	9 39.5	1.2443	1.2973	4.95	0.6949
	30	0.5814	36.56	2.437	334 46	22 19.1	143 57	9 35.8	1.2448	1.2967	5.06	0.7042
	31	0.5842	+36.65	+2.443	334 53	22 19.5	143 1	9 32.1	+1.2454	+1.2961	+5.17	+0.7132
Aug.	1	0.5869	36.78	2.452	335 2	22 20.1	142 5	9 28.3	1.2464	1.2955	5.27	0.7219
	2	0.5897	36.93	2.462	335 11	22 20.7	141 8	9 24.5	1.2477	1.2949	5.37	0.7303
	3	0.5924	37.13	2.475	335 21	22 21.4	140 11	9 20.7	1.2494	1.2943	5.47	0.7383
h	4	0.5951	37.34	2.489	335 28	22 21.9	139 14	9 16.9	1.2515	1.2937	5.57	0.7461
(21.0)	5	0.5979	+37.56	+2.504	335 32	22 22.1	138 17	9 13.1	+1.2539	+1.2930	+5.67	+0.7537
	6	0.6006	37.77	2.518	335 33	22 22.3	137 20	9 9.3	1.2562	1.2924	5.77	0.7611
	7	0.6034	37.94	2.529	335 30	22 22.0	136 23	9 5.5	1.2584	1.2918	5.87	0.7682
	8	0.6061	38.09	2.539	335 26	22 21.7	135 25	9 1.7	1.2602	1.2912	5.96	0.7751
	9	0.6088	38.18	2.545	335 20	22 21.3	134 27	8 57.8	1.2617	1.2905	6.05	0.7818
	10	0.6116	+38.26	+2.551	335 17	22 21.1	133 29	8 53.9	+1.2628	+1.2899	+6.14	+0.7882
	11	0.6143	38.31	2.554	335 15	22 21.0	132 31	8 50.1	1.2635	1.2893	6.23	0.7944
	12	0.6171	38.38	2.559	335 17	22 21.1	131 33	8 46.2	1.2641	1.2887	6.32	0.8004
	13	0.6198	38.46	2.564	335 21	22 21.4	130 34	8 42.3	1.2648	1.2881	6.40	0.8063
	14	0.6225	38.58	2.572	335 29	22 21.9	129 35	8 38.3	1.2656	1.2874	6.48	0.8119
	15	0.6253	+38.72	+2.581	335 39	22 22.6	128 36	8 34.4	+1.2667	+1.2868	+6.56	+0.8173
	16	0.6280	+38.89	+2.593	335 48	22 23.2	127 36	8 30.4	+1.2680	+1.2862	+6.64	+0.8225

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	"	s	° ′	h m	° ′	h m			"	s
Aug.	16	0.6280	+38.89	+2.593	335 48	22 23.2	127 36	8 30.4	+1.2680	+1.2862	+6.64	+0.8225
	17	0.6308	39.09	2.606	335 57	22 23.8	126 37	8 26.5	1.2698	1.2856	6.72	0.8276
	18	0.6335	39.30	2.620	336 2	22 24.1	125 37	8 22.5	1.2719	1.2850	6.79	0.8325
h	19	0.6362	39.51	2.634	336 4	22 24.3	124 37	8 18.5	1.2740	1.2844	6.87	0.8372
(22.0)	20	0.6389	39.69	2.646	336 4	22 24.3	123 38	8 14.5	1.2760	1.2838	6.94	0.8417
	21	0.6417	+39.83	+2.655	336 0	22 24.0	122 38	8 10.5	+1.2777	+1.2832	+7.01	+0.8461
	22	0.6444	39.92	2.661	335 55	22 23.7	121 38	8 6.5	1.2791	1.2826	7.08	0.8504
	23	0.6471	39.98	2.665	335 49	22 23.3	120 38	8 2.5	1.2800	1.2821	7.15	0.8545
	24	0.6498	40.00	2.667	335 45	22 23.0	119 37	7 58.5	1.2805	1.2815	7.21	0.8584
	25	0.6526	40.02	2.668	335 44	22 22.9	118 36	7 54.4	1.2808	1.2810	7.27	0.8621
	26	0.6553	+40.04	+2.669	335 46	22 23.1	117 35	7 50.3	+1.2809	+1.2805	+7.33	+0.8657
	27	0.6581	40.08	2.672	335 50	22 23.3	116 34	7 46.3	1.2810	1.2800	7.39	0.8691
	28	0.6608	40.16	2.677	335 58	22 23.9	115 33	7 42.2	1.2814	1.2795	7.45	0.8724
	29	0.6635	40.27	2.685	336 6	22 24.4	114 31	7 38.1	1.2822	1.2790	7.50	0.8756
	30	0.6663	40.42	2.695	336 15	22 25.0	113 29	7 33.9	1.2833	1.2785	7.55	0.8786
	31	0.6690	+40.61	+2.707	336 22	22 25.5	112 27	7 29.8	+1.2849	+1.2781	+7.60	+0.8815
Sept.	1	0.6718	40.80	2.720	336 27	22 25.8	111 25	7 25.7	1.2867	1.2777	7.65	0.8842
	2	0.6745	40.98	2.732	336 28	22 25.9	110 24	7 21.6	1.2885	1.2773	7.69	0.8867
h	3	0.6772	41.13	2.742	336 27	22 25.8	109 22	7 17.5	1.2903	1.2769	7.73	0.8891
(23.0)	4	0.6800	41.25	2.750	336 23	22 25.5	108 20	7 13.3	1.2917	1.2765	7.77	0.8914
	5	0.6827	+41.34	+2.756	336 19	22 25.3	107 17	7 9.1	+1.2929	+1.2761	+7.81	+0.8936
	6	0.6855	41.40	2.760	336 15	22 25.0	106 14	7 4.9	1.2937	1.2757	7.85	0.8956
	7	0.6882	41.43	2.762	336 13	22 24.9	105 11	7 0.7	1.2941	1.2754	7.89	0.8975
	8	0.6909	41.46	2.764	336 14	22 24.9	104 8	6 56.5	1.2944	1.2751	7.92	0.8992
	9	0.6937	41.50	2.767	336 18	22 25.2	103 5	6 52.3	1.2946	1.2748	7.95	0.9008
	10	0.6964	+41.58	+2.772	336 26	22 25.7	102 2	6 48.1	+1.2949	+1.2745	+7.98	+0.9023
	11	0.6992	41.68	2.779	336 35	22 26.3	100 59	6 43.9	1.2955	1.2743	8.01	0.9037
	12	0.7019	41.82	2.787	336 45	22 27.0	99 55	6 39.7	1.2965	1.2741	8.03	0.9050
	13	0.7046	41.99	2.799	336 54	22 27.6	98 52	6 35.5	1.2977	1.2739	8.05	0.9061
	14	0.7074	42.18	2.812	337 2	22 28.1	97 49	6 31.3	1.2993	1.2737	8.07	0.9071
	15	0.7101	+42.37	+2.825	337 6	22 28.4	96 45	6 27.0	+1.3010	+1.2735	+8.09	+0.9080
	16	0.7129	42.53	2.835	337 8	22 28.5	95 41	6 22.7	1.3026	1.2734	8.10	0.9088
	17	0.7156	42.67	2.845	337 6	22 28.4	94 37	6 18.5	1.3041	1.2733	8.11	0.9094
	18	0.7183	42.77	2.851	337 3	22 28.2	93 33	6 14.2	1.3052	1.2733	8.11	0.9099
h	19	0.7211	42.82	2.855	336 59	22 27.9	92 29	6 9.9	1.3059	1.2732	8.11	0.9102
(24.0)	20	0.7238	+42.84	+2.856	336 57	22 27.8	91 25	6 5.7	+1.3062	+1.2732	+8.12	+0.9104
	21	0.7266	42.83	2.855	336 56	22 27.7	90 21	6 1.4	1.3062	1.2731	8.12	0.9105
	22	0.7293	42.84	2.856	336 59	22 27.9	89 16	5 57.1	1.3061	1.2731	8.12	0.9105
	23	0.7320	42.85	2.857	337 4	22 28.3	88 12	5 52.8	1.3061	1.2731	8.12	0.9104
	24	0.7348	42.90	2.860	337 13	22 28.9	87 8	5 48.5	1.3062	1.2732	8.12	0.9102
	25	0.7375	+43.01	+2.867	337 23	22 29.5	86 4	5 44.3	+1.3066	+1.2733	+8.11	+0.9098
	26	0.7403	43.13	2.875	337 33	22 30.2	85 0	5 40.0	1.3073	1.2734	8.11	0.9092
	27	0.7430	43.29	2.886	337 42	22 30.8	83 56	5 35.7	1.3085	1.2735	8.10	0.9085
	28	0.7457	43.47	2.898	337 50	22 31.3	82 51	5 31.4	1.3099	1.2737	8.08	0.9077
	29	0.7485	43.65	2.910	337 54	22 31.6	81 47	5 27.1	1.3114	1.2739	8.06	0.9068
	30	0.7512	+43.81	+2.921	337 56	22 31.7	80 43	5 22.9	+1.3129	+1.2741	+8.04	+0.9058
Oct.	1	0.7540	+43.93	+2.929	337 55	22 31.7	79 39	5 18.6	+1.3142	+1.2743	+8.02	+0.9046

FOR WASHINGTON MEAN MIDNIGHT.

olar Day. id. Hour.)	τ	f		G		H		Log *g*.	Log *h*.	*i*	Log *i*.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	° '	h m	° '	h m			"	s
ct. 1	0.7540	+43.93	+2.929	337 55	22 31.7	79 39	5 18.6	+1.3142	+1.2743	+8.02	+0.9046
2	0.7567	44.02	2.935	337 53	22 31.5	78 35	5 14.3	1.3152	1.2745	8.00	0.9033
3	0.7594	44.09	2.939	337 51	22 31.4	77 31	5 10.1	1.3159	1.2748	7.98	0.9019
h 4	0.7621	44.13	2.942	337 51	22 31.4	76 27	5 5.8	1.3163	1.2751	7.95	0.9003
l.0) 5	0.7649	44.16	2.944	337 54	22 31.6	75 23	5 1.5	1.3165	1.2754	7.92	0.8986
6	0.7676	+44.21	+2.947	338 0	22 32.0	74 19	4 57.3	+1.3166	+1.2757	+7.89	+0.8967
7	0.7703	44.26	2.951	338 9	22 32.5	73 16	4 53.1	1.3167	1.2760	7.86	0.8946
8	0.7730	44.36	2.957	338 20	22 33.3	72 12	4 48.8	1.3171	1.2764	7.82	0.8924
9	0.7758	44.49	2.966	338 32	22 34.1	71 9	4 44.6	1.3178	1.2768	7.78	0.8901
10	0.7785	44.65	2.977	338 43	22 34.9	70 5	4 40.3	1.3189	1.2772	7.73	0.8877
11	0.7813	+44.85	+2.990	338 54	22 35.6	69 2	4 36.1	+1.3203	+1.2776	+7.68	+0.8852
12	0.7840	45.05	3.003	339 1	22 36.1	67 58	4 31.9	1.3218	1.2780	7.63	0.8825
13	0.7867	45.24	3.016	339 6	22 36.4	66 54	4 27.6	1.3234	1.2785	7.58	0.8797
14	0.7895	45.39	3.026	339 7	22 36.5	65 51	4 23.4	1.3248	1.2790	7.53	0.8767
15	0.7922	45.52	3.035	339 7	22 36.5	64 48	4 19.2	1.3260	1.2795	7.47	0.8735
16	0.7950	+45.59	+3.039	339 6	22 36.4	63 45	4 15.0	+1.3268	+1.2800	+7.41	+0.8701
17	0.7977	45.63	3.042	339 6	22 36.4	62 42	4 10.8	1.3272	1.2805	7.35	0.8666
18	0.8004	45.65	3.043	339 8	22 36.5	61 39	4 6.6	1.3273	1.2810	7.29	0.8630
h 19	0.8032	45.67	3.045	339 12	22 36.8	60 36	4 2.4	1.3273	1.2815	7.23	0.8592
.0) 20	0.8059	45.70	3.047	339 19	22 37.3	59 33	3 58.2	1.3272	1.2821	7.16	0.8552
21	0.8087	+45.76	+3.051	339 29	22 37.9	58 31	3 54.1	+1.3273	+1.2827	+7.09	+0.8510
22	0.8114	45.85	3.057	339 41	22 38.7	57 29	3 49.9	1.3276	1.2833	7.02	0.8467
23	0.8141	45.99	3.066	339 53	22 39.5	56 27	3 45.8	1.3283	1.2839	6.95	0.8422
24	0.8169	46.17	3.078	340 4	22 40.3	55 25	3 41.7	1.3294	1.2845	6.88	0.8375
25	0.8196	46.36	3.091	340 14	22 40.9	54 23	3 37.5	1.3309	1.2851	6.80	0.8326
26	0.8224	+46.57	+3.105	340 22	22 41.5	53 21	3 33.4	+1.3324	+1.2857	+6.72	+0.8275
27	0.8251	46.76	3.117	340 26	22 41.7	52 20	3 29.3	1.3340	1.2864	6.64	0.8223
28	0.8278	46.93	3.129	340 28	22 41.9	51 18	3 25.2	1.3354	1.2870	6.56	0.8169
29	0.8306	47.06	3.137	340 29	22 41.9	50 17	3 21.1	1.3367	1.2877	6.48	0.8112
30	0.8333	47.16	3.144	340 29	22 41.9	49 16	3 17.1	1.3376	1.2883	6.39	0.8053
31	0.8361	+47.23	+3.149	340 30	22 42.0	48 15	3 13.0	+1.3382	+1.2890	+6.30	+0.7992
ov. 1	0.8388	47.29	3.153	340 33	22 42.2	47 14	3 8.9	1.3386	1.2896	6.21	0.7929
2	0.8415	47.36	3.157	340 41	22 42.7	46 14	3 4.9	1.3389	1.2902	6.12	0.7864
h 3	0.8443	47.43	3.162	340 50	22 43.3	45 13	3 0.9	1.3392	1.2909	6.02	0.7796
.0) 4	0.8470	47.54	3.169	341 2	22 44.1	44 13	2 56.9	1.3396	1.2915	5.92	0.7725
5	0.8498	+47.70	+3.180	341 15	22 45.0	43 12	2 52.9	+1.3406	+1.2922	+5.82	+0.7652
6	0.8525	47.90	3.193	341 29	22 45.9	42 12	2 48.9	1.3418	1.2928	5.72	0.7576
7	0.8552	48.12	3.208	341 40	22 46.7	41 12	2 44.9	1.3433	1.2934	5.62	0.7498
8	0.8580	48.36	3.224	341 49	22 47.3	40 13	2 40.9	1.3451	1.2941	5.52	0.7417
9	0.8607	48.58	3.239	341 56	22 47.7	39 13	2 36.9	1.3468	1.2947	5.41	0.7333
10	0.8635	+48.79	+3.253	342 0	22 48.0	38 14	2 32.9	+1.3485	+1.2954	+5.30	+0.7245
11	0.8662	48.97	3.265	342 1	22 48.1	37 14	2 28.9	1.3500	1.2960	5.19	0.7154
12	0.8689	49.09	3.273	342 1	22 48.1	36 15	2 25.0	1.3511	1.2967	5.08	0.7060
13	0.8717	49.17	3.278	342 2	22 48.1	35 16	2 21.1	1.3518	1.2973	4.97	0.6963
14	0.8744	49.24	3.283	342 4	22 48.3	34 17	2 17.1	1.3523	1.2979	4.86	0.6862
15	0.8772	+49.29	+3.286	342 9	22 48.6	33 18	2 13.2	+1.3526	+1.2985	+4.74	+0.6757
16	0.8799	+49.36	+3.291	342 15	22 49.0	32 19	2 9.3	+1.3529	+1.2991	+4.62	+0.6648

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	"	s	° ′	h m	° ′	h m			"	s
Nov.	16	0.8799	+49.36	+3.291	342 15	22 49.0	32 19	2 9.3	+1.3529	+1.2991	+4.62	+0.6648
	17	0.8826	49.45	3.297	342 25	22 49.7	31 20	2 5.4	1.3533	1.2997	4.50	0.6536
h	18	0.8854	49.57	3.305	342 37	22 50.5	30 22	2 1.5	1.3538	1.3003	4.38	0.6419
(4.0)	19	0.8881	49.73	3.315	342 49	22 51.3	29 24	1 57.6	1.3548	1.3009	4.26	0.6296
	20	0.8909	49.93	3.329	343 1	22 52.1	28 26	1 53.7	1.3561	1.3015	4.14	0.6168
	21	0.8936	+50.16	+3.344	343 10	22 52.7	27 28	1 49.9	+1.3577	+1.3020	+4.01	+0.6035
	22	0.8963	50.40	3.360	343 18	22 53.2	26 30	1 46.0	1.3595	1.3025	3.89	0.5897
	23	0.8990	50.63	3.375	343 23	22 53.5	25 32	1 42.1	1.3613	1.3030	3.76	0.5752
	24	0.9018	50.85	3.390	343 25	22 53.7	24 35	1 38.3	1.3631	1.3035	3.63	0.5601
	25	0.9045	51.03	3.402	343 26	22 53.7	23 37	1 34.5	1.3646	1.3040	3.50	0.5444
	26	0.9072	+51.18	+3.412	343 26	22 53.7	22 40	1 30.7	+1.3658	+1.3045	+3.37	+0.5281
	27	0.9099	51.30	3.420	343 27	22 53.8	21 43	1 26.9	1.3668	1.3050	3.24	0.5110
	28	0.9127	51.39	3.426	343 29	22 53.9	20 46	1 23.1	1.3675	1.3055	3.11	0.4929
	29	0.9154	51.48	3.432	343 34	22 54.3	19 49	1 19.3	1.3681	1.3059	2.98	0.4738
	30	0.9182	51.60	3.440	343 42	22 54.8	18 52	1 15.5	1.3688	1.3063	2.85	0.4536
Dec.	1	0.9209	+51.74	+3.449	343 52	22 55.5	17 55	1 11.7	+1.3697	+1.3067	+2.71	+0.4323
	2	0.9236	51.92	3.461	344 3	22 56.2	16 58	1 7.9	1.3707	1.3071	2.57	0.4099
	3	0.9264	52.14	3.476	344 15	22 57.0	16 2	1 4.1	1.3721	1.3075	2.43	0.3861
h	4	0.9291	52.38	3.492	344 25	22 57.7	15 5	1 0.3	1.3738	1.3078	2.29	0.3606
(5.0)	5	0.9319	52.64	3.509	344 33	22 58.2	14 8	0 56.5	1.3757	1.3081	2.15	0.3336
	6	0.9346	+52.91	+3.527	344 38	22 58.5	13 12	0 52.8	+1.3777	+1.3084	+2.01	+0.3045
	7	0.9373	53.16	3.544	344 41	22 58.7	12 15	0 49.0	1.3796	1.3087	1.87	0.2731
	8	0.9401	53.37	3.558	344 42	22 58.8	11 19	0 45.3	1.3814	1.3089	1.73	0.2393
	9	0.9428	53.55	3.570	344 41	22 58.7	10 22	0 41.5	1.3828	1.3092	1.59	0.2023
	10	0.9456	53.67	3.578	344 39	22 58.6	9 26	0 37.7	1.3839	1.3094	1.45	0.1618
	11	0.9483	+53.78	+3.585	344 40	22 58.7	8 30	0 34.0	+1.3847	+1.3096	+1.31	+0.1170
	12	0.9510	53.86	3.591	344 42	22 58.8	7 33	0 30.2	1.3853	1.3098	1.17	0.0668
	13	0.9538	53.95	3.597	344 46	22 59.1	6 37	0 26.5	1.3858	1.3100	1.02	0.0099
	14	0.9565	54.04	3.603	344 53	22 59.5	5 41	0 22.7	1.3864	1.3101	0.88	9.9443
	15	0.9593	54.19	3.613	345 1	23 0.1	4 45	0 19.0	1.3872	1.3103	0.73	9.8669
	16	0.9620	+54.36	+3.625	345 11	23 0.7	3 49	0 15.3	+1.3883	+1.3104	+0.59	+9.7721
	17	0.9647	54.57	3.638	345 20	23 1.3	2 53	0 11.5	1.3897	1.3104	0.45	9.6506
	18	0.9675	54.81	3.654	345 27	23 1.8	1 57	0 7.8	1.3914	1.3105	0.30	9.4814
h	19	0.9702	55.07	3.671	345 33	23 2.2	1 1	0 4.1	1.3933	1.3105	0.16	9.1998
(6.0)	20	0.9730	55.33	3.689	345 35	23 2.3	0 5	0 0.3	1.3952	1.3106	+0.01	+8.1335
	21	0.9757	+55.55	+3.703	345 36	23 2.4	359 9	23 56.6	+1.3970	+1.3106	−0.13	−9.1176
	22	0.9784	55.76	3.717	345 34	23 2.3	358 13	23 52.9	1.3986	1.3106	0.27	9.4406
	23	0.9812	55.96	3.730	345 33	23 2.2	357 17	23 49.1	1.4001	1.3105	0.42	9.6236
	24	0.9839	56.09	3.739	345 30	23 2.0	356 21	23 45.4	1.4013	1.3104	0.56	9.7527
	25	0.9867	56.18	3.745	345 30	23 2.0	355 25	23 41.7	1.4021	1.3103	0.71	9.8506
	26	0.9894	+56.30	+3.753	345 31	23 2.1	354 29	23 37.9	+1.4029	+1.3102	−0.85	−9.9310
	27	0.9921	56.42	3.761	345 36	23 2.4	353 33	23 34.2	1.4037	1.3101	0.99	9.9987
	28	0.9949	56.55	3.770	345 42	23 2.8	352 36	23 30.4	1.4045	1.3100	1.14	0.0571
	29	0.9976	56.73	3.782	345 49	23 3.3	351 40	23 26.7	1.4056	1.3098	1.28	0.1084
	30	1.0004	56.95	3.797	345 57	23 3.8	350 43	23 22.9	1.4070	1.3096	1.43	0.1543
	31	1.0031	+57.18	+3.812	346 5	23 4.3	349 47	23 19.1	+1.4085	+1.3094	−1.57	−0.1956
	32	1.0058	+57.44	+3.829	346 10	23 4.7	348 51	23 15.4	+1.4104	+1.3092	−1.71	−0.2332

MEAN PLACES FOR 1896. (January 0^d.133, Washington.)

Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
			h	m	s	s	°	′	″	″
α Andromedæ . .		2.1	0	3	0.668	+ 3.0926	+ 28	30	58.38	+ 19.884
* β Cassiopeiæ . . .		2.4	0	3	37.652	3.1776	+ 58	34	32.92	19.851
* 22 Andromedæ . .		4.9	0	4	54.900	3.1045	+ 45	29	35.90	20.034
4 Draconis (H.) .	S. P.	5.1	0	7	20.080	2.8780	+101	48	21.15	20.021
γ Pegasi (*Algenib.*). .		2.8	0	7	52.792	3.0844	+ 14	36	19.18	20.022
* σ Andromedæ . .		4.4	0	12	53.662	+ 3.1246	+ 36	12	30.83	+ 19.981
* ι Ceti		3.6	0	14	7.544	3.0527	− 9	24	2.77	19.955
* 6 Ursæ Minoris .	S. P.	6.2	0	14	21.536	0.2210	+ 91	43	24.21	19.940
* 44 Piscium . . .		5.8	0	20	4.249	3.0734	+ 1	21	49.39	19.951
β Hydri		2.8	0	20	16.900	3.2214	− 77	50	24.10	20.281
12 Ceti		6.0	0	24	43.855	+ 3.0611	− 4	31	54.85	+ 19.934
κ Draconis . .	S. P.	3.8	0	29	2.765	2.5884	+109	38	18.88	19.886
* π Andromedæ . .		4.4	0	31	19.485	3.1922	+ 33	8	48.36	19.867
α Cassiopeiæ (*var.*) .		2.3	0	34	36.305	3.3774	+ 55	58	0.75	19.783
β Ceti		2.2	0	38	22.177	3.0139	− 18	33	27.32	19.796
21 Cassiopeiæ . . .		5.7	0	38	46.401	+ 3.8683	+ 74	25	10.56	+ 19.745
* ο Cassiopeiæ . . .		4.7	0	38	55.669	3.3219	+ 47	42	54.25	19.749
* δ Piscium . . .		4.8	0	43	17.135	3.1079	+ 7	1	8.35	19.647
32^2 Camelop. (H.) .	S. P.	5.2	0	48	21.861	0.4067	+ 96	1	18.81	19.595
* γ Cassiopeiæ . . .		2.3	0	50	25.769	3.5837	+ 60	9	12.31	19.556
* μ Andromedæ . .		4.0	0	50	58.729	+ 3.3131	+ 37	56	7.17	+ 19.610
* 43 Cephei (H.) . .		4.6	0	54	31.902	7.3253	+ 85	41	56.99	19.488
ε Piscium . . .		4.3	0	57	32.695	3.1097	+ 7	19	48.58	19.447
β Andromedæ . .		2.2	1	3	54.498	3.3462	+ 35	4	8.68	19.156
* κ Tucanæ . . .		4.9	1	12	14.738	2.0540	− 69	25	42.14	19.164
* f Piscium . . .		5.1	1	12	26.001	+ 3.0901	+ 3	4	0.29	+ 19.029
θ^1 Ceti		3.6	1	18	49.472	2.9972	− 8	43	12.18	18.658
α Ursæ Minoris (*Polaris*)		2.2	1	20	54.424	24.4450	+ 88	45	11.50	18.815
38 Cassiopeiæ . . .		5.9	1	23	29.226	4.3873	+ 69	43	45.28	18.661
* κ Octantis . .	S. P.	5.4	1	24	8.426	8.8450	− 94	44	50.00	18.719
η Piscium . . .		3.7	1	25	55.042	+ 3.2035	+ 14	48	34.74	+ 18.652
* υ Andromedæ . .		4.2	1	30	41.559	3.5067	+ 40	53	7.40	18.133
* π Piscium . . .		5.5	1	31	35.088	3.1749	+ 11	36	34.78	18.521
α Eridani (*Achernar*) .		0.4	1	33	50.086	2.2315	− 57	45	54.70	18.348
* ν Piscium . . .		4.6	1	36	1.117	3.1184	+ 4	57	40.54	18.317
ο Piscium . . .		4.4	1	39	54.071	+ 3.1630	+ 8	38	2.53	+ 18.204
* ζ Ceti		3.6	1	46	19.618	2.9619	− 10	51	0.04	17.810
β Arietis . . .		2.8	1	48	53.614	3.3047	+ 20	17	58.42	17.714
50 Cassiopeiæ . . .		4.1	1	54	32.949	5.0235	+ 71	55	4.71	17.623
* γ Andromedæ . .		2.2	1	57	30.818	3.6630	+ 41	49	50.00	17.426
α Arietis . . .		2.1	2	1	18.578	+ 3.3723	+ 22	58	14.02	+ 17.156
α Draconis . .	S. P.	3.7	2	1	34.474	1.6241	+115	7	38.06	17.291
* β Trianguli . . .		3.1	2	3	21.264	3.5566	+ 34	29	43.03	17.187
ξ^1 Ceti		4.5	2	7	29.234	+ 3.1748	+ 8	21	31.39	17.014
* 4 Ursæ Minoris .	S. P.	4.9	2	9	15.119	− 0.3126	+101	57	49.38	16.904
* γ Trianguli . . .		4.3	2	11	7.819	+ 3.5529	+ 33	21	58.21	+ 16.827
* 67 Ceti		5.6	2	11	47.706	2.9897	− 6	54	5.81	16.717
* δ Hydri		4.2	2	19	53.950	1.0566	69	7	57.27	16.444
ι Cassiopeiæ . . .		4.6	2	20	29.352	4.8708	+ 66	56	4.71	16.406
ξ^2 Ceti		4.5	2	22	37.743	+ 3.1845	+ 7	59	37.45	+ 16.277

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1896. (January 0d.133, Washington.)

	Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
				h	m	s	s	°	′	″	″
	5 Ursæ Minoris	S. P.	4.5	2	27	44.683	− 0.1824	+103	50	30.22	+ 16.012
*	μ Hydri		5.3	2	33	51.984	− 1.4182	− 79	33	46.13	15.689
*	δ Ceti		4.1	2	34	9.107	+ 3.0733	− 0	7	13.52	15.679
*	θ Persei		4.2	2	37	5.698	4.0731	+ 48	47	18.09	15.433
	γ Ceti		3.6	2	37	54.647	3.1039	+ 2	47	50.54	15.320
*	σ Arietis		5.5	2	45	44.990	+ 3.3055	+ 14	39	11.75	+ 14.993
	β Ursæ Minoris	S. P.	2.2	2	51	0.462	− 0.2243	+105	25	10.27	14.720
*	47 Cephei (H.)		5.7	2	52	15.257	+ 7.7517	+ 79	0	26.21	14.646
*	ε Arietis		4.6	2	53	15.859	3.4222	+ 20	55	27.69	14.588
	α Ceti		2.6	2	56	50.524	3.1310	+ 3	40	53.63	14.288
*	β Persei. (*Algol*) (*var.*)		2.3	3	1	24.004	+ 3.8860	+ 40	33	16.95	+ 14.094
	48 Cephei (H.)		5.5	3	7	7.216	7.4302	+ 77	21	8.20	13.679
	ζ Arietis		4.8	3	8	55.354	3.4405	+ 20	39	31.86	13.532
	α Persei		1.9	3	16	53.816	+ 4.2607	+ 49	29	26.79	13.062
*	ι Hydri		5.7	3	18	33.122	− 1.5855	− 77	46	5.23	13.037
*	ρ Octantis	S. P.	5.7	3	19	19.039	+13.0691	− 95	52	55.30	+ 12.893
	γ^2 Ursæ Minoris	S. P.	3.2	3	20	53.625	− 0.1287	+107	47	45.41	12.812
*	*f* Tauri		4.3	3	25	7.798	+ 3.3058	+ 12	34	48.73	12.544
	ε Eridani		3.7	3	28	1.803	2.8240	− 9	48	36.71	12.373
	δ Persei		3.1	3	35	31.159	4.2527	+ 47	27	16.92	11.777
*	γ Camelopardalis (H)		4.6	3	39	22.586	+ 6.2489	+ 71	0	41.14	+ 11.497
	η Tauri		3.1	3	41	18.055	3.5580	+ 23	46	59.85	11.353
	ζ Persei		3.0	3	47	35.620	+ 3.7617	+ 31	34	27.90	10.920
	ζ Ursæ Minoris	S. P.	4.6	3	47	46.476	− 2.2383	+101	53	8.36	10.939
*	γ Hydri		3.3	3	48	50.798	− 0.9896	− 74	33	27.33	10.989
*	ε Persei		3.0	3	50	52.357	+ 4.0118	+ 39	42	32.78	+ 10.690
	γ Eridani		3.0	3	53	10.662	2.7988	− 13	48	16.35	10.423
*	A^1 Tauri		4.6	3	58	32.779	3.5409	+ 21	47	50.24	10.055
*	*c* Persei		4.3	4	1	6.600	4.3395	+ 47	26	4.28	9.905
	Groombr. 2320	S. P.	5.5	4	6	2.030	0.1424	+111	54	56.85	9.497
*	o^1 Eridani		4.2	4	6	47.313	+ 2.9272	− 7	6	32.38	+ 9.593
	γ Tauri		3.8	4	13	52.465	+ 3.4097	+ 15	22	34.74	8.930
*	η Ursæ Minoris	S. P.	5.0	4	20	32.598	− 1.8089	+104	0	18.05	8.178
	ε Tauri		3.6	4	22	32.576	+ 3.4982	+ 18	56	58.26	8.228
	η Draconis	S. P.	2.8	4	22	35.097	+ 0.8075	+118	15	1.63	8.215
*	δ Mensæ		5.6	4	25	0.644	− 4.2057	− 80	27	28.87	+ 8.081
*	*m* Persei		6.0	4	26	5.814	+ 4.2118	+ 42	50	28.73	7.969
	A Draconis	S. P.	5.0	4	28	11.374	− 0.1323	+111	0	25.46	7.799
	α Tauri (*Aldebaran*)		1.0	4	29	57.140	+ 3.4381	+ 16	18	0.02	7.486
*	τ Tauri		4.5	4	36	0.133	3.5962	+ 22	45	25.70	7.160
	α Camelopardalis		4.4	4	43	42.381	+ 5.9295	+ 66	9	56.11	+ 6.551
*	*i* Tauri		5.2	4	45	17.381	3.5060	+ 18	39	45.09	6.376
	ι Aurigæ		2.8	4	50	13.222	3.9015	+ 33	0	4.28	5.990
*	ζ Aurigæ		3.9	4	55	12.457	+ 4.1862	+ 40	55	25.70	5.588
	ε Ursæ Minoris	S. P.	4.5	4	56	37.687	− 6.3111	+ 97	47	30.57	5.477
	11 Orionis		4.7	4	58	37.526	+ 3.4249	+ 15	15	32.38	+ 5.267
*	β Eridani		2.9	5	2	44.207	2.9488	− 5	13	15.58	4.900
	α Aurigæ (*Capella*)		0.1	5	9	0.342	4.4258	+ 45	53	30.75	3.990
	β Orionis (*Rigel*)		0.3	5	9	32.366	2.8816	− 8	19	19.21	4.373
*	τ Orionis		3.8	5	12	33.383	+ 2.9130	− 6	57	25.69	+ 4.110

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1896.0. (January $0^d.133$, Washington.)

Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
β Tauri		1.8	5 19 43.033	+ 3.7898	+ 28 31 9.54	+ 3.326
Groombridge 966		6.4	5 25 49.575	8.0054	+ 74 58 27.91	2.998
* χ Aurigæ		5.0	5 25 57.610	3.9055	+ 32 6 54.75	2.986
δ Orionis (*var.*)		2.3	5 26 41 590	3.0636	- 0 22 34.85	2.899
α Leporis		2.7	5 28 8.587	2.6449	- 17 53 48.88	2.778
* Groombridge 944		6.4	5 28 40.389	+ 18.6920	+ 85 8 39.50	+ 2.746
ε Orionis		1.8	5 30 56.148	3.0426	- 1 16 6.70	2.538
α Columbæ		2.7	5 35 53.049	+ 2.1729	- 34 7 47.24	2.061
ω Draconis	S. P.	4.9	5 37 33.682	- 0.3531	+111 11 38.51	1.636
* κ Orionis		2.3	5 42 49.410	+ 2.8450	- 9 42 24.35	1.504
ψ¹ Draconis	S. P.	4.8	5 43 47.207	- 1.0778	+107 48 0.91	+ 1.691
* ν Aurigæ		4.1	5 44 16.846	+ 4.1547	+ 39 7 4.05	1.411
* δ Doradus		4.4	5 44 35.385	0.1053	- 65 46 28.24	1.327
α Orionis (*var.*)		0.9	5 49 32.467	3.2472	+ 7 23 14.74	0.922
* β Aurigæ		2.0	5 51 54.022	4.4020	+ 44 56 11.28	0.698
* θ Aurigæ		2.9	5 52 37.808	+ 4.0922	+ 37 12 18.09	+ 0.556
ν Orionis		4.5	6 1 38.108	+ 3.4275	+ 14 46 50.19	- 0.173
δ Ursæ Minoris	S. P.	4.4	6 5 50.799	- 19.4800	+ 93 23 14.35	0.562
22 Camelopardalis (H.)		4.7	6 7 22.906	+ 6.6168	+ 69 21 21.17	0.763
* η Geminorum		3.5	6 8 36.036	3.6228	+ 22 32 12.22	0.769
μ Geminorum		3.2	6 16 40.163	+ 3.6314	+ 22 33 59.92	- 1.579
* ψ¹ Aurigæ		5.1	6 16 53.375	4.6262	+ 49 20 26.30	1.488
α Argûs (*Canopus*)		-0.8	6 21 38.669	1.3305	- 52 38 19.93	1.882
* ν Geminorum		4.2	6 22 47.268	+ 3.5630	+ 20 16 39.66	2.013
* χ Draconis	S. P.	5.3	6 22 55.856	- 1.0802	+107 18 44.74	1.628
γ Geminorum		2.0	6 31 42.245	+ 3.4672	+ 16 29 16.12	- 2.813
* ε Geminorum		3.2	6 37 32.006	3.6931	+ 25 14 1.97	3.283
* ψ⁵ Aurigæ		5.4	6 39 14.549	4.3284	+ 43 40 50.23	3.269
α Canis Majoris (*Sirius*)		-1.4	6 40 33.920	2.6436	- 16 34 25.08	4.737
* θ Geminorum		3.7	6 45 56.133	+ 3.9601	+ 34 5 11.51	4.024
* ζ Mensæ		5.6	6 48 42.115	- 4.9124	- 80 42 14.44	- 4.148
50 Draconis	S. P.	5.6	6 49 43.597	- 1.9116	+104 41 19.51	4.392
51 Cephei (H.)		5.3	6 51 44.194	+ 29.7410	+ 87 12 38.68	4.634
ε Canis Majoris		1.5	6 54 32.335	2.3578	- 28 49 50.94	4.740
* ζ Geminorum (*var.*)		4.0	6 57 56.496	3.5621	+ 20 43 21.09	5.034
δ Canis Majoris		1.9	7 4 9.747	+ 2.4386	- 26 13 41.22	- 5.531
63 Aurigæ		5.2	7 4 30.180	4.1356	+ 39 29 24.43	5.551
25 Camelopardalis		5.3	7 9 12.300	+ 12.9265	+ 82 36 40.79	5.996
γ² Volantis (*var.*)		3.9	7 9 37.620	- 0.4957	- 70 19 49.88	6.000
δ Draconis	S. P.	3.1	7 12 31.911	+ 0.0279	+112 31 17.10	6.327
δ Geminorum		3.5	7 13 54.746	+ 3.5874	+ 22 10 24.88	- 6.371
τ Draconis	S. P.	4.5	7 17 33.307	- 1.1208	+106 50 15.53	6.765
Piazzi vii, 67		5.7	7 20 3.762	+ 6.2930	+ 68 40 40.08	6.901
β Canis Minoris		3.1	7 21 30.712	3.2594	+ 8 29 55.04	7.020
λ Ursæ Minoris	S. P.	6.5	7 26 59.834	- 66.7360	+ 91 1 13.20	7.438
α² Geminorum (*Castor*)		1.9	7 27 57.960	+ 3.8375	+ 32 6 59.72	- 7.586
α Canis Min. (*Procyon*)		0.5	7 33 51.481	+ 3.1431	+ 5 29 28.71	9.020
β Geminorum (*Pollux*)		1.2	7 38 57.169	3.6783	+ 28 16 37.85	8.448
φ Geminorum		5.0	7 47 8.000	3.6791	+ 27 2 5.51	9.060
26 Lyncis		5.8	7 47 8.421	+ 4.3861	+ 47 50 1.75	- 9.057

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

† *Periodic corrections given in the Appendix* are still to be applied to the positions of Sirius and Procyon.

MEAN PLACES FOR 1896.0. (January 0ᵈ.133, Washington.)

	Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
				h	m	s	s	°	′	″	″
*	Groombridge 1374		5.6	7	47	44.672	+ 7.2738	+ 74	11	43.23	− 9.118
	ε Draconis	S. P.	3.9	7	48	31.370	− 0.1821	+109	59	48.95	9.172
*	ω^1 Cancri		6.0	7	54	38.372	+ 3.6364	+ 25	40	38.81	9.614
	3 Ursæ Majoris (H.)		5.5	8	2	28.101	6.0411	+ 68	46	47.44	10.210
	15 Argûs (ρ)		3.1	8	3	6.896	2.5545	− 24	0	16.55	10.215
*	ζ^1 Cancri		4.8	8	6	14.874	+ 3.4457	+ 17	57	38.43	− 10.631
*	β Cancri		3.8	8	10	52.530	+ 3.2580	+ 9	30	20.85	10.882
	κ Cephei (*pr.*)	S. P.	4.4	8	12	23.383	− 1.9340	+102	36	6.50	10.978
*	30 Monocerotis		3.9	8	20	27.822	+ 2.9998	− 3	34	1.84	11.530
*	θ Chamæleontis		4.6	8	23	45.321	− 1.7211	− 77	8	56.01	11.747
	η Cancri		5.4	8	26	41.761	+ 3.4775	+ 20	47	39.37	− 12.030
	Groombr. 3241	S. P.	6.5	8	30	27.327	− 0.2243	+107	49	14.34	12.219
*	σ Hydræ		4.5	8	33	19.461	+ 3.1455	+ 3	42	22.92	12.457
*	γ Cancri		4.9	8	37	16.111	3.4795	+ 21	50	32.31	12.749
	ε Hydræ		3.5	8	41	16.158	3.1813	+ 6	48	0.77	13.027
*	σ^2 Cancri (*mean*)		5.5	8	47	54.017	+ 3.6721	+ 30	58	23.18	− 13.433
	ι Ursæ Majoris		3.3	8	52	5.257	+ 4.1304	+ 48	26	59.23	13.932
	12 Year Cat. 1879	S. P.	5.3	8	52	18.289	− 2.5697	+ 99	50	16.12	13.665
	σ^2 Ursæ Majoris		5.0	9	1	14.613	+ 5.3460	+ 67	33	23.99	14.311
	κ Cancri		5.1	9	2	6.923	3.2552	+ 11	5	12.06	14.313
*	θ Hydræ		4.0	9	8	57.265	+ 3.1257	+ 2	45	10.23	− 15.038
*	β Argûs		2.0	9	12	3.472	0.6754	− 69	17	19.68	14.809
	ι Argûs		2.6	9	14	18.181	1.6010	− 58	50	18.61	15.007
*	α Lyncis		3.3	9	14	43.159	3.6674	+ 34	49	55.24	15.049
	α Cephei	S. P.	2.6	9	16	5.874	1.4361	+117	51	18.47	15.183
	1 Draconis (H.)		4.5	9	22	15.594	+ 8.9480	+ 81	47	9.04	− 15.506
	α Hydræ		2.1	9	22	28.619	2.9490	− 8	12	28.57	15.469
	d Ursæ Majoris		4.8	9	25	17.093	5.3898	+ 70	17	13.85	15.593
	θ Ursæ Majoris		3.2	9	25	54.032	4.0375	+ 52	9	3.94	16.241
	β Cephei (*pr.*)	S. P.	3.4	9	27	19.062	0.7918	+109	53	45.37	15.761
*	10 Leonis Minoris		4.7	9	27	51.230	+ 3.6923	+ 36	51	33.26	− 15.805
*	υ Leonis		3.8	9	35	36.023	+ 3.2063	+ 10	21	55.20	16.240
*	ζ Chamæleontis		5.2	9	36	56.940	− 1.5814	− 80	28	26.67	16.278
	ε Leonis		3.2	9	39	56.918	+ 3.4139	+ 24	15	10.68	16.445
	11 Cephei	S. P.	4.8	9	40	24.033	0.8992	+109	10	2.70	16.543
	μ Leonis		4.0	9	46	50.968	+ 3.4208	+ 26	29	48.09	− 16.814
*	19 Leonis Minoris		5.2	9	51	18.968	3.6930	+ 41	33	3.02	16.981
	79 Draconis	S. P.	6.6	9	51	34.002	0.7260	+106	47	22.85	17.017
*	π Leonis		5.0	9	54	43.073	3.1738	+ 8	32	35.15	17.153
	α Leonis (*Regulus*)		1.3	10	2	50.030	3.1999	+ 12	28	31.47	17.489
	32 Ursæ Majoris		5.7	10	10	28.946	+ 4.4134	+ 65	37	36.78	− 17.831
*	λ Ursæ Majoris		3.6	10	10	49.511	3.6371	+ 43	25	59.87	17.889
	γ^1 Leonis		2.5	10	14	14.356	3.3139	+ 20	22	3.20	18.100
*	μ Hydræ		4.1	10	21	3.676	2.9009	− 16	18	20.90	18.322
*	β Leonis Minoris		4.3	10	21	52.233	3.4847	+ 37	14	24.45	18.329
*	α Antliæ		4.5	10	22	23.513	+ 2.7397	− 30	32	19.15	− 18.228
	9 Draconis (H.)		5.0	10	26	15.783	5.2448	+ 76	14	54.68	18.415
	ρ Leonis		4.0	10	27	20.167	3.1636	+ 9	50	29.92	18.444
	226 Cephei (B.)	S. P.	5.7	10	30	26.993	1.0752	+104	18	34.45	18.532
*	β Octantis	S. P.	4.4	10	35	25.254	+ 6.4420	− 98	4	24.84	− 18.704

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MEAN PLACES FOR 1896.0. (January $0^{d}.133$, Washington.)

	Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
				h	m	s	s	°	′	″	″
*	41 Leonis Minoris		5.1	10	37	45.705	+ 3.2697	+ 23	43	58.23	– 18.749
	η Argûs (*var.*)		1–6	10	41	1.475	2.3149	– 59	8	15.95	18.877
	l Leonis		5.3	10	43	47.494	3.1580	+ 11	5	43.55	18.982
*	δ^2 Chamæleontis		4.7	10	44	48.695	0.6317	– 79	59	30.91	18.983
	ι Cephei	S. P.	3.6	10	45	58.537	2.1233	+114	20	48.07	18.883
*	46 Leonis Minoris		3.9	10	47	29.772	+ 3.3679	+ 34	46	32.68	– 19.305
*	Groombridge 1706		6.3	10	51	38.095	4.9490	+ 78	19	38.33	19.196
	α Ursæ Majoris		2.0	10	57	18.608	+ 3.7422	+ 62	18	44.77	19.373
*	η Octantis		6.1	11	0	3.583	– 0.2342	– 84	2	4.03	19.371
*	p^3 Leonis		6.2	11	1	35.818	+ 3.0596	+ 2	31	12.09	19.491
*	ψ Ursæ Majoris		3.2	11	3	49.025	+ 3.3910	+ 45	3	44.56	– 19.512
	δ Leonis		2.7	11	8	34.687	3.1974	+ 21	5	36.27	19.692
*	ν Ursæ Majoris		3.7	11	12	51.894	3.2562	+ 33	39	42.62	19.579
	δ Crateris		3.9	11	14	8.473	2.9968	– 14	12	57.40	19.469
	ο Cephei	S. P.	5.1	11	14	21.339	2.4467	+112	27	26.74	19.674
	τ Leonis		5.1	11	22	35.330	+ 3.0860	+ 3	25	44.14	– 19.807
	λ Draconis		4.0	11	25	13.702	3.6142	+ 69	54	18.10	19.843
*	ξ Hydræ		3.8	11	27	53.143	2.9440	– 31	16	56.28	19.890
	υ Leonis		4.4	11	31	37.430	3.0713	– 0	14	58.77	19.864
	γ Cephei	S. P.	3.5	11	35	4.473	2.4203	+102	56	53.57	20.077
*	χ Ursæ Majoris		3.9	11	40	33.612	+ 3.1881	+ 48	21	21.48	– 19.964
	β Leonis		2.2	11	43	45.314	3.0635	+ 15	9	12.12	20.121
	γ Ursæ Majoris		2.4	11	48	21.745	3.1790	+ 54	16	22.29	20.028
	Groombr. 4163	S. P.	7.0	11	49	46.420	2.8711	+106	10	6.50	20.023
*	π Virginis		4.6	11	55	32.578	3.0740	+ 7	11	38.57	20.087
	ο Virginis		4.3	11	59	54.684	+ 3.0574	+ 9	18	38.04	– 20.014
*	ε Corvi		3.2	12	4	46.534	3.0839	– 22	2	28.86	20.048
	4 Draconis (H.)		5.1	12	7	20.080	2.8780	+ 78	11	38.85	20.021
	γ Corvi		2.7	12	10	27.447	3.0803	– 16	57	52.30	20.016
*	2 Canum Venaticorum		6.0	12	10	54.952	3.0206	+ 41	14	21.06	20.063
	β Chamæleontis		4.5	12	12	14.721	+ 3.4121	– 78	44	4.38	– 20.001
*	6 Ursæ Minoris		6.2	12	14	21.531	0.2210	+ 88	16	35.79	19.940
	η Virginis		4.0	12	14	35.112	3.0688	– 0	5	20.16	20.040
	α^1 Crucis		0.9	12	20	48.807	3.2996	– 62	31	21.77	20.012
*	δ^2 Corvi		3.1	12	24	29.107	3.1033	– 15	56	10.51	20.081
	β Canum Venaticorum		4.4	12	28	48.270	+ 2.8583	+ 41	55	21.01	– 19.612
	β Corvi		2.8	12	28	55.401	3.1427	– 22	49	18.03	19.959
	κ Draconis		3.8	12	29	2.765	2.5884	+ 70	21	41.12	19.886
	γ Virginis (*mean*)		2.9	12	36	23.442	3.0386	– 0	52	45.25	19.807
	21 Cassiopeiæ	S. P.	5.7	12	38	46.401	3.8683	+105	34	49.44	19.745
	31 Comæ Berenices		5.1	12	46	38.104	+ 2.9296	+ 28	6	23.33	– 19.655
	32^2 Camelopardalis (H.)		5.2	12	48	21.861	0.4067	+ 83	58	41.19	19.595
	γ Cassiopeiæ	S. P.	2.3	12	50	25.769	3.5837	+119	50	47.69	19.556
	α Canum Venaticorum		3.2	12	51	9.850	2.8145	+ 38	52	47.87	19.506
	43 Cephei (H.)	S. P.	4.6	12	54	31.902	7.3253	+ 94	18	3.01	19.488
	δ Muscæ		3.8	12	55	8.135	+ 4.2034	– 70	59	14.95	– 19.466
	ε Virginis		3.1	12	57	0.030	2.9879	+ 11	31	5.14	19.410
	θ Virginis		4.6	13	4	33.858	3.1016	– 4	59	1.76	19.304
	20 Canum Venaticorum		4.7	13	12	52.776	2.6959	+ 41	7	12.31	19.027
	α Virginis (*Spica*)		1.1	13	19	42.791	+ 3.1544	– 10	37	6.72	– 18.890

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MEAN PLACES FOR 1896.0. (January 0^d.133, Washington.)

Name of Star.	Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	′	″	″
α Urs. Min. (*Polaris*) S. P.	2.2	13	20	54.424	+24.4450	+ 91	14	48.50	− 18.815
38 Cassiopeiæ S. P.	5.9	13	23	29.226	4.3873	+110	16	14.72	18.661
* κ Octantis	5.4	13	24	8.426	8.8450	− 85	15	10.00	18.719
ζ Virginis	3.6	13	29	23.595	3.0535	− 0	3	50.98	18.507
* B. A. C. 4536	5.0	13	30	9.161	2.6817	+ 37	42	54.60	18.529
* *m* Virginis	5.4	13	36	9.179	+ 3.1440	− 8	10	41.25	− 18.273
η Ursæ Majoris	1.9	13	43	26.637	2.3706	+ 49	49	56.01	18.069
η Bootis	2.8	13	49	43.978	2.8567	+ 18	55	8.65	18.158
50 Cassiopeiæ S. P.	4.1	13	54	32.949	5.0235	+108	4	55.29	17.623
* θ Apodis	Var.	13	55	11.948	5.6939	− 76	17	38.97	17.566
β Centauri	0.7	13	56	28.736	+ 4.1832	− 59	52	16.79	− 17.571
* π Hydræ	3.6	14	0	26.819	3.4024	− 26	10	49.50	17.348
α Draconis	3.7	14	1	34.474	1.6241	+ 64	52	21.94	17.291
* *d* Bootis	4.8	14	5	39.406	2.7386	+ 25	35	3.34	17.187
* κ Virginis	4.2	14	7	20.853	+ 3.1947	− 9	47	22.81	16.909
* 4 Ursæ Minoris	4.9	14	9	15.119	− 0.3126	+ 78	2	10.62	− 16.904
* δ Octantis	5.0	14	10	15.425	+ 9.0436	− 83	11	27.63	16.910
α Bootis (*Arcturus*)	0.2	14	10	55.064	2.7352	+ 19	43	25.84	18.870
* λ Bootis	4.3	14	12	25.804	2.2824	+ 46	33	56.90	16.648
* λ Virginis	4.7	14	13	28.897	3.2389	− 12	53	32.71	16.730
ι Cassiopeiæ S. P.	4.6	14	20	29.352	+ 4.8708	+113	3	55.29	− 16.406
θ Bootis	4.1	14	21	39.449	2.0441	+ 52	19	52.97	16.751
ρ Bootis	3.6	14	27	20.951	+ 2.5878	+ 30	49	40.26	15.946
5 Ursæ Minoris	4.5	14	27	44.683	− 0.1824	+ 76	9	29.78	16.012
α Centauri (*mean*)	−0.1	14	32	32.093	+ 4.0393	− 60	24	21.72	15.034
* μ Hydri S. P.	5.3	14	33	51.984	− 1.4182	−100	26	13.87	− 15.689
* α Apodis	4.1	14	34	56.934	+ 7.2220	− 78	36	11.25	15.643
* 33 Bootis	5.3	14	34	58.013	2.2342	+ 44	51	11.20	15.698
ε Bootis	2.6	14	40	26.771	2.6213	+ 27	30	45.44	15.326
α^2 Libræ	2.9	14	45	7.423	+ 3.3105	− 15	36	34.48	15.147
β Ursæ Minoris	2.2	14	51	0.462	− 0.2243	+ 74	34	49.73	− 14.720
* 47 Cephei (H.) S. P.	5.7	14	52	15.257	+ 7.7517	+100	59	33.79	14.646
* γ Scorpii	3.4	14	57	58.911	3.5007	− 24	52	23.31	14.356
β Bootis	3.7	14	58	1.738	2.2601	+ 40	48	2.48	14.346
48 Cephei (H.) S. P.	5.5	15	7	7.216	7.4302	+102	38	51.80	13.679
* δ Bootis	3.5	15	11	18.652	+ 2.4210	+ 33	42	10.76	− 13.567
β Libræ	2.9	15	11	24.587	3.2225	− 8	59	56.99	13.487
* ρ Octantis	5.7	15	19	19.039	13.0691	− 84	7	4.70	12.893
μ^1 Bootis	4.5	15	20	33.715	+ 2.2663	+ 37	44	31.12	12.764
γ^2 Ursæ Minoris	3.2	15	20	53.625	− 0.1287	+ 72	12	14.59	12.812
* β Coronæ Borealis	3.9	15	23	32.508	+ 2.4752	+ 29	27	50.62	− 12.576
α Coronæ Borealis	2.3	15	30	17.091	2.5394	+ 27	3	52.87	12.287
α Serpentis	2.7	15	39	8.698	2.9521	+ 6	45	9.99	11.529
* γ Camelop. (H.) S. P.	4.6	15	39	22.586	6.2489	+108	59	18.86	11.497
ε Serpentis	3.7	15	45	37.893	+ 2.9875	+ 4	47	27.26	11.026
ζ Ursæ Minoris	4.6	15	47	46.476	− 2.2383	+ 78	6	51.64	− 10.939
ε Coronæ Borealis	4.1	15	53	16.975	+ 2.4834	+ 27	10	44.63	10.592
δ Scorpii	2.6	15	54	10.999	3.5397	− 22	19	32.12	10.500
β^1 Scorpii	2.9	15	59	23.360	3.4817	− 19	31	14.66	10.111
* δ^1 Apodis	4.9	16	4	48.450	+ 8.7966	− 78	25	58.81	− 9.660

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MEAN PLACES FOR 1896.0. (January $0^d.133$, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
* φ Herculis . . .	4.2	16 5 29.322	+ 1.8816	+ 45 12 27.31	− 9.566
Groombridge 2320 .	5.5	16 6 2.030	0.1424	+ 68 5 3.15	9.497
δ Ophiuchi . . .	2.8	16 8 53.702	3.1402	− 3 25 35.13	9.488
* σ Coronæ Borealis (*mean*)	5.3	16 10 46.961	2.2449	+ 34 7 20.66	9.238
τ Herculis . . .	3.9	16 16 36.895	1.8014	+ 46 33 39.15	8.720
* γ Apodis . . .	4.0	16 17 30.667	+ 9.0851	− 78 39 47.41	− 8.672
* η Ursæ Minoris . .	5.0	16 20 32.598	− 1.8089	+ 75 59 41.95	8.178
η Draconis . . .	2.8	16 22 35.097	+ 0.8075	+ 61 44 58.37	8.215
α Scorpii (*Antares*) .	1.2	16 23 1.791	3.6712	− 26 12 3.94	8.271
β Herculis . . .	2.8	16 25 44.941	+ 2.5777	+ 21 42 58.72	8.035
A Draconis . . .	5.0	16 28 11.374	− 0.1323	+ 68 59 34.54	− 7.799
ζ Ophiuchi . . .	2.8	16 31 25.899	+ 3.2996	− 10 21 22.81	7.536
α Trianguli Australis .	2.2	16 37 39.217	6.3095	− 68 50 10.42	7.101
η Herculis . . .	3.7	16 39 19.788	2.0541	+ 39 7 12.20	7.003
α Camelopardalis . S. P.	4.4	16 43 42.381	5.9295	+113 50 3.89	6.551
κ Ophiuchi . . .	3.4	16 52 44.730	+ 2.8377	+ 9 32 12.64	− 5.807
ε Ursæ Minoris . .	4.5	16 56 37.687	− 6.3111	+ 82 12 29.43	5.477
d Herculis . . .	5.3	16 57 45.953	+ 2.2115	+ 33 43 8.15	5.377
* η Ophiuchi . . .	2.5	17 4 24.756	3.4360	− 15 35 45.89	4.738
α^1 Herculis (*var.*) . .	3.1	17 9 54.307	2.7338	+ 14 30 32.15	4.321
* π Herculis . . .	3.4	17 11 25.508	+ 2.0893	+ 36 55 34.97	− 4.210
* θ Ophiuchi . . .	3.3	17 15 37.300	3.6798	− 24 53 44.57	3.912
b Ophiuchi (*var.*) . .	4.4	17 20 1.097	3.6595	− 24 4 46.05	3.612
* δ Aræ	3.8	17 21 42.708	5.4033	− 60 35 49.40	3.475
Groombridge 966 S. P.	6.4	17 25 49.575	8.0054	+105 1 32.09	2.998
β Draconis . . .	3.0	17 28 4.992	+ 1.3537	+ 52 22 41.67	− 2.784
* Groombridge 944 S. P.	6.4	17 28 40.389	18.6920	+ 94 51 20.50	2.746
α Ophiuchi . . .	2.2	17 30 6.397	2.7831	+ 12 38 8.80	2.845
* ι Herculis . . .	4.0	17 36 31.880	+ 1.6969	+ 46 3 41.84	2.051
ω Draconis . . .	4.9	17 37 33.682	− 0.3531	+ 68 48 21.49	1.636
μ Herculis . . .	3.5	17 42 23.318	+ 2.3466	+ 27 46 53.14	− 2.300
ψ^1 Draconis . . .	4.8	17 43 47.207	− 1.0778	+ 72 11 59.09	1.691
* θ Herculis . . .	3.9	17 52 41.140	+ 2.0553	+ 37 15 51.67	0.621
γ Draconis . . .	2.5	17 54 11.464	1.3917	+ 51 30 3.70	0.538
γ^2 Sagittarii . . .	2.9	17 59 7.596	3.8517	− 30 25 30.97	− 0.295
* ο Herculis . . .	3.9	18 3 29.143	+ 2.3395	+ 28 44 53.37	+ 0.308
δ Ursæ Minoris . .	4.4	18 5 50.799	−19.4800	+ 86 36 45.65	0.562
22 Camelop. (H.) . S. P.	4.7	18 7 22.906	+ 6.6168	+110 38 38.83	0.763
μ^1 Sagittarii . . .	4.1	18 7 32.617	3.5867	− 21 5 9.15	0.647
η Serpentis . . .	3.5	18 15 55.690	3.1024	− 2 55 31.42	0.717
* λ Sagittarii . . .	2.9	18 21 33.134	+ 3.7025	− 25 28 45.37	+ 1.660
* χ Draconis . . .	5.3	18 22 55.856	− 1.0802	+ 72 41 15.26	1.628
1 Aquilæ . . .	4.0	18 29 32.859	+ 3.2645	− 8 19 0.44	2.248
* ζ Pavonis . . .	4.2	18 30 52.847	7.0266	− 71 30 58.25	2.553
α Lyræ (*Vega*) . .	0.2	18 33 25.053	2.0314	+ 38 41 12.42	3.186
β Lyræ (*var.*) . .	3.6	18 46 14.423	+ 2.2143	+ 33 14 30.54	+ 4.001
σ Sagittarii . . .	2.3	18 48 48.998	+ 3.7213	− 26 25 32.80	4.162
50 Draconis . . .	5.6	18 49 43.597	− 1.9116	+ 75 18 40.49	4.392
51 Cephei (H.) . S. P.	5.3	18 51 44.194	+29.7410	+ 92 47 21.32	4.634
σ Octantis . . .	5.6	18 52 53.186	+104.0170	− 89 15 36.43	+ 4.569

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	Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
				h	m	s	s	°	′	″	″
*	γ Lyræ		3.3	18	55	3.212	+ 2.2444	+ 32	32	49.09	+ 4.781
	ζ Aquilæ		3.1	19	0	37.806	2.7569	+ 13	42	32.09	5.139
*	ι Lyræ		5.2	19	3	35.473	2.1413	+ 35	56	13.91	5.502
*	25 Camelopardalis	S. P.	5.3	19	9	12.300	12.9265	+ 97	23	19.21	5.996
	d Sagittarii		5.0	19	11	32.998	3.5119	− 19	8	16.20	6.141
	δ Draconis		3.1	19	12	31.911	+ 0.0279	+ 67	28	42.90	+ 6.327
*	θ Lyræ		4.4	19	12	45.424	+ 2.0791	+ 37	56	54.24	6.260
	τ Draconis		4.5	19	17	33.307	− 1.1208	+ 73	9	44.47	6.765
	Piazzi vii, 67	S. P.	5.7	19	20	3.762	+ 6.2930	+111	19	19.92	6.901
	δ Aquilæ		3.5	19	20	15.279	3.0251	+ 2	54	26.97	6.956
*	β Cygni		3.1	19	26	31.640	+ 2.4195	+ 27	44	28.43	+ 7.384
	λ Ursæ Minoris		6.5	19	26	59.834	−66.7360	+ 88	58	46.80	7.438
	κ Aquilæ		5.0	19	31	17.776	+ 3.2286	− 7	15	30.66	7.779
*	β Sagittæ		4.5	19	36	22.689	2.6955	+ 17	14	5.99	8.158
	γ Aquilæ		2.8	19	41	18.923	2.8522	+ 10	21	35.45	8.570
*	δ Cygni		2.9	19	41	43.506	+ 1.8761	+ 44	52	36.57	+ 8.647
	α Aquilæ (*Altair*)		0.9	19	45	42.552	2.9275	+ 8	35	37.11	9.296
*	Groombridge 1374	S. P.	5.6	19	47	44.672	+ 7.2738	+105	48	16.77	9.118
	ε Draconis		3.9	19	48	31.370	− 0.1821	+ 70	0	11.05	9.172
*	ε Pavonis		4.1	19	48	33.362	+ 7.0087	− 73	11	1.47	9.147
	β Aquilæ		3.9	19	50	12.284	+ 2.9470	+ 6	8	49.13	+ 8.783
*	γ Sagittæ		3.6	19	54	7.930	2.6678	+ 19	12	35.31	9.616
*	ϵ Sagittarii		4.5	19	56	15.838	3.6960	− 27	59	55.39	9.758
	τ Aquilæ		5.7	19	59	3.628	2.9329	+ 6	59	3.98	9.962
	3 Ursæ Majoris (H.)	S.P.	5.5	20	2	28.101	6.0411	+111	13	12.56	10.210
*	θ Aquilæ		3.3	20	5	56.303	+ 3.0969	− 1	7	47.88	+ 10.482
*	31 Cygni		3.9	20	10	21.422	1.8894	+ 46	25	33.11	10.804
	α^2 Capricorni		3.7	20	12	17.074	+ 3.3316	− 12	52	1.53	10.942
	κ Cephei (*pr.*)		4.4	20	12	23.383	− 1.9340	+ 77	23	53.50	10.978
	α Pavonis		2.1	20	17	25.672	+ 4.7802	− 57	4	4.65	11.226
	γ Cygni		2.3	20	18	29.859	+ 2.1538	+ 39	55	25.37	+ 11.387
	π Capricorni		5.1	20	21	22.147	3.4388	− 18	33	9.32	11.582
	ε Delphini		4.0	20	28	14.694	+ 2.8671	+ 10	56	59.76	12.063
	Groombridge 3241		6.5	20	30	27.327	− 0.2243	+ 72	10	45.66	12.219
*	α Delphini		3.9	20	34	48.453	+ 2.7878	+ 15	32	42.54	12.541
*	β Pavonis		3.4	20	35	35.271	+ 5.4664	− 66	34	35.39	+ 12.569
	α Cygni		1.4	20	37	53.205	2.0445	+ 44	54	30.98	12.739
*	ψ Capricorni		4.3	20	39	56.307	3.5597	− 25	38	40.30	12.723
*	ε Cygni		2.6	20	42	0.205	2.4279	+ 33	34	50.15	13.357
	μ Aquarii		4.8	20	47	2.692	+ 3.2392	− 9	22	24.85	13.311
	12 Year Catalogue, 1879		5.3	20	52	18.289	− 2.5697	+ 80	9	43.88	+ 13.665
	ν Cygni		4.1	20	53	17.740	+ 2.2344	+ 40	46	0.23	13.740
	σ^2 Ursæ Majoris	S. P.	5.0	21	1	14.613	5.3460	+112	26	36.01	14.311
	61^1 Cygni		5.4	21	2	14.063	2.6835	+ 38	14	16.38	17.551
	ζ Cygni		3.3	21	8	30.544	2.5499	+ 29	48	0.87	14.628
*	τ Cygni		3.8	21	10	38.391	+ 2.3937	+ 37	36	5.38	+ 15.278
	α Cephei		2.6	21	16	5.874	1.4361	+ 62	8	41.53	15.183
	1 Pegasi		4.3	21	17	16.566	2.7723	+ 19	21	34.20	15.258
*	ζ Capricorni		3.8	21	20	43.829	3.4334	- 22	51	42.64	15.405
	1 Draconis (H.)	S. P.	4.5	21	22	15.594	+ 8.9480	+ 98	12	50.96	+ 15.506

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1896.0. (January 0^d.133, Washington.)

Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
δ Ursæ Majoris .	S. P.	4.8	21 25 17.093	+ 5.3898	+109 42 46.15	+ 15.593
β Aquarii . .	.	2.9	21 26 5.069	3.1613	- 6 1 43.39	15.681
β Cephei (*pr.*) .	.	3.4	21 27 19.062	0.7918	+ 70 6 14.63	15.761
ξ Aquarii . .	.	4.8	21 32 12.978	3.1974	- 8 19 14.19	15.990
* 74 Cygni . . .	.	5.0	21 32 46.822	2.4020	+ 39 56 46.00	16.066
* λ¹ Octantis . .	.	5.4	21 34 56.760	+ 9.7155	- 83 11 49.75	+ 16.091
* ζ Chamæleontis .	S. P.	5.2	21 36 56.940	- 1.5814	- 99 31 33.33	16.278
ε Pegasi . .	.	2.4	21 39 4.705	+ 2.9467	+ 9 23 53.46	16.373
11 Cephei . .	.	4.8	21 40 24.033	0.8992	+ 70 49 57.30	16.543
* π² Cygni . . .	.	4.5	21 42 57.061	2.2138	+ 48 49 42.04	16.555
μ Capricorni . .	.	5.2	21 47 37.581	+ 3.2753	- 14 2 28.84	+ 16.797
* 16 Pegasi . .	.	5.1	21 48 19.788	2.7282	+ 25 26 8.89	16.834
79 Draconis . .	.	6.6	21 51 34.002	0.7260	+ 73 12 37.15	17.017
α Aquarii . .	.	3.0	22 0 26.543	3.0825	- 0 49 30.36	17.371
α Gruis . . .	.	1.9	22 1 40.718	3.8030	- 47 27 52.15	17.266
* π Pegasi . .	.	4.3	22 5 22.098	+ 2.6606	+ 32 40 4.88	+ 17.593
32 Ursæ Majoris .	S. P.	5.7	22 10 28.946	4.4134	+114 22 23.22	17.831
θ Aquarii . .	.	4.4	22 11 20.764	3.1686	- 8 18 4.11	17.816
* υ Octantis . .	.	6.2	22 11 43.262	12.9508	- 86 29 44.64	17.946
* γ Aquarii . .	.	4.0	22 16 17.065	3.1005	- 1 54 41.06	18.053
π Aquarii . .	.	4.6	22 19 57.966	+ 3.0645	+ 0 50 58.76	+ 18.168
* σ Aquarii . .	.	4.9	22 25 8.584	3.1777	- 11 12 36.35	18.331
9 Draconis . .	S. P.	5.0	22 26 15.783	5.2448	+103 45 5.32	18.415
* α Lacertæ . .	.	3.9	22 27 0.350	2.4633	+ 49 44 51.71	18.424
η Aquarii . .	.	4.2	22 30 0.733	3.0834	- 0 39 12.72	18.469
226 Cephei (B.) .	.	5.7	22 30 26.993	+ 1.0752	+ 75 41 25.55	+ 18.532
* 10 Lacertæ . .	.	5.0	22 34 35.657	2.6874	+ 38 30 32.30	18.679
* β Octantis . .	.	4.4	22 35 25.254	6.4420	- 81 55 35.16	18.704
ζ Pegasi . .	.	3.5	22 36 16.513	2.9911	+ 10 17 18.49	18.716
* λ Pegasi . .	.	4.1	22 41 31.271	2.8857	+ 23 1 6.10	18.884
ι Cephei . .	.	3.6	22 45 58.537	+ 2.1233	+ 65 39 11.93	+ 18.883
λ Aquarii . .	.	3.8	22 47 11.366	3.1324	- 8 7 58.62	19.084
* Groombr. 1706 .	S. P.	6.3	22 51 38.095	4.9490	+101 40 21.67	19.196
α Pis. Aust. (*Fomalhaut*).		1.3	22 51 54.226	3.3234	- 30 10 24.32	19.003
* ο Andromedæ .	.	3.8	22 57 8.099	2.7511	+ 41 46 0.75	19.294
α Ursæ Majoris .	S. P.	2.0	22 57 18.608	+ 3.7422	+117 41 15.23	+ 19.373
α Pegasi (*Markab*)	.	2.5	22 59 34.806	2.9853	+ 14 38 44.27	19.309
* φ Aquarii . .	.	4.3	23 8 56.211	3.1085	- 6 36 34.51	19.365
ο Cephei . .	.	5.1	23 14 21.339	2.4467	+ 67 32 33.26	19.674
* τ Pegasi . .	.	4.6	23 15 29.327	2.9643	+ 23 10 15.32	19.661
θ Piscium . .	.	4.3	23 22 41.529	+ 3.0413	+ 5 48 27.23	+ 19.731
λ Draconis . .	S. P.	4.0	23 25 13.702	3.6142	+110 5 41.90	19.843
* λ Andromedæ .	.	3.8	23 32 28.405	2.0240	+ 45 53 39.83	19.475
ι Piscium . .	.	4.3	23 34 36.060	3.0843	+ 5 3 45.30	19.486
γ Cephei . .	.	3.5	23 35 4.473	2.4203	+ 77 3 6.43	20.077
* A¹ Aquarii . .	.	5.2	23 38 48.501	+ 3.1163	- 18 51 14.69	+ 19.662
* δ Sculptoris . .	.	4.6	23 43 30.569	3.1314	- 28 42 18.77	19.858
* γ¹ Octantis . .	.	5.2	23 45 59.434	3.6682	- 82 35 48.62	19.905
Groombridge 4163	.	6.6	23 49 46.420	2.8711	+ 73 49 53.50	20.023
ω Piscium . .	.	4.2	23 53 58.243	3.0787	+ 6 17 15.01	19.931
* 33 Piscium . .	.	4.7	24 0 0.736	+ 3.0708	- 6 17 21.26	+ 20.147

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
Jan.	1 20	+88 45	Jan.	6 52	+87 12	Jan.	18 5	+86 36	Jan.	19 25	+88 58
	s	″		s	″		s	″		s	″
0.3	47.30	36.9	0.5	18.79	44.3	0.9	24.98	34.8	1.0	24.46	44.7
1.3	46.32	37.1	1.5	18.97	44.7	1.9	24.94	34.4	2.0	23.89	44.4
2.3	45.29	37.2	2.5	19.12	45.0	2.9	24.94	34.1	3.0	23.36	44.0
3.3	44.22	37.3	3.5	19.24	45.4	3.9	24.96	33.7	4.0	22.91	43.7
4.3	43.14	37.4	4.5	19.31	45.7	4.9	24.98	33.3	5.0	22.56	43.3
5.3	42.09	37.5	5.5	19.38	46.1	5.9	25.04	33.0	6.0	22.30	43.0
6.3	41.09	37.6	6.5	19.41	46.4	6.9	25.09	32.6	7.0	22.09	42.6
7.3	40.14	37.6	7.5	19.43	46.7	7.9	25.16	32.3	8.0	21.89	42.3
8.3	39.25	37.7	8.5	19.47	47.0	8.9	25.21	32.0	9.0	21.68	42.1
9.3	38.38	37.7	9.5	19.50	47.3	9.9	25.27	31.7	10.0	21.44	41.8
10.2	37.54	37.8	10.5	19.55	47.6	10.9	25.31	31.4	11.0	21.17	41.5
11.2	36.68	37.9	11.5	19.63	47.8	11.9	25.35	31.1	12.0	20.88	41.2
12.2	35.79	37.9	12.5	19.69	48.1	12.9	25.39	30.8	13.0	20.56	40.9
13.2	34.86	38.0	13.5	19.77	48.4	13.9	25.44	30.5	13.9	20.27	40.6
14.2	33.88	38.1	14.5	19.84	48.8	14.9	25.50	30.2	14.9	20.01	40.2
15.2	32.84	38.1	15.5	19.86	49.1	15.9	25.59	29.8	15.9	19.80	39.9
16.2	31.75	38.2	16.5	19.86	49.5	16.9	25.72	29.4	16.9	19.68	39.5
17.2	30.65	38.2	17.5	19.83	49.8	17.9	25.84	29.1	17.9	19.65	39.2
18.2	29.55	38.2	18.5	19.76	50.2	18.9	25.99	28.7	18.9	19.70	38.8
19.2	28.50	38.1	19.5	19.67	50.5	19.9	26.17	28.4	19.9	19.81	38.5
20.2	27.49	38.1	20.4	19.56	50.8	20.9	26.34	28.1	20.9	19.95	38.2
21.2	26.54	38.1	21.4	19.45	51.1	21.9	26.51	27.9	21.9	20.12	37.9
22.2	25.62	38.0	22.4	19.35	51.4	22.9	26.68	27.6	22.9	20.28	37.6
23.2	24.75	38.0	23.4	19.27	51.7	23.9	26.82	27.3	23.9	20.38	37.3
24.2	23.87	37.9	24.4	19.21	52.0	24.9	26.96	27.1	24.9	20.47	37.0
25.2	23.03	37.9	25.4	19.15	52.2	25.9	27.10	26.8	25.9	20.52	36.7
26.2	22.15	37.9	26.4	19.10	52.5	26.9	27.22	26.5	26.9	20.53	36.4
27.2	21.22	37.9	27.4	19.04	52.8	27.9	27.37	26.2	27.9	20.56	36.1
28.2	20.24	37.9	28.4	18.98	53.1	28.9	27.54	25.9	28.9	20.63	35.7
29.2	19.21	37.8	29.4	18.90	53.4	29.9	27.71	25.6	29.9	20.77	35.4
30.2	18.15	37.8	30.4	18.78	53.8	30.9	27.91	25.2	30.9	20.98	35.0
31.2	17.10	37.7	31.4	18.64	54.1	31.9	28.13	24.9	31.9	21.28	34.7
32.2	16.06	37.6	32.4	18.44	54.4	32.9	28.37	24.6	32.9	21.64	34.4

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

an ar te.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
b.	1 19	+88 45	Feb.	6 52	+87 12	Feb.	18 5	+86 36	Feb.	19 25	+88 58
	s	″		s	″		s	″		s	″
.2	76.06	37.6	1.4	18.44	54.4	1.9	28.37	24.6	1.9	21.64	34.4
.2	75.07	37.5	2.4	18.24	54.7	2.9	28.60	24.4	2.9	22.08	34.0
.2	74.12	37.4	3.4	18.03	55.0	3.9	28.84	24.1	3.9	22.52	33.7
.2	73.25	37.3	4.4	17.82	55.3	4.9	29.07	23.9	4.9	22.98	33.4
.2	72.45	37.1	5.4	17.61	55.5	5.9	29.31	23.7	5.9	23.43	33.2
.2	71.66	37.0	6.4	17.41	55.7	6.9	29.54	23.5	6.9	23.85	32.9
.2	70.88	36.9	7.4	17.24	56.0	7.9	29.75	23.3	7.9	24.22	32.7
.2	70.10	36.8	8.4	17.07	56.2	8.9	29.97	23.1	8.9	24.58	32.4
.2	69.28	36.7	9.4	16.90	56.5	9.9	30.18	22.8	9.9	24.94	32.1
.2	68.42	36.6	10.4	16.74	56.7	10.9	30.41	22.6	10.9	25.32	31.8
.2	67.53	36.5	11.4	16.54	57.0	11.9	30.66	22.3	11.9	25.75	31.5
.2	66.57	36.3	12.4	16.32	57.3	12.9	30.94	22.1	12.9	26.24	31.2
.2	65.61	36.2	13.4	16.07	57.6	13.9	31.23	21.8	13.9	26.81	30.9
.2	64.66	36.0	14.4	15.80	57.9	14.9	31.53	21.6	14.9	27.49	30.6
.1	63.73	35.8	15.4	15.47	58.2	15.9	31.87	21.4	15.9	28.20	30.3
.1	62.87	35.6	16.4	15.15	58.4	16.8	32.19	21.2	16.9	28.98	30.0
.1	62.08	35.4	17.4	14.82	58.6	17.8	32.51	21.0	17.9	29.77	29.7
.1	61.32	35.2	18.4	14.49	58.8	18.8	32.84	20.9	18.9	30.54	29.5
.1	60.64	35.0	19.4	14.18	59.0	19.8	33.14	20.7	19.9	31.28	29.3
.1	60.00	34.8	20.4	13.88	59.2	20.8	33.43	20.6	20.9	31.97	29.1
.1	59.34	34.6	21.4	13.61	59.4	21.8	33.70	20.4	21.9	32.63	28.9
.1	58.71	34.4	22.4	13.36	59.6	22.8	33.98	20.3	22.9	33.27	28.6
.1	58.02	34.2	23.4	13.10	59.8	23.8	34.24	20.1	23.9	33.87	28.4
.1	57.31	34.1	24.3	12.84	60.0	24.8	34.54	19.9	24.9	34.51	28.2
.1	56.55	33.9	25.3	12.57	60.2	25.8	34.83	19.7	25.9	35.20	27.9
.1	55.77	33.7	26.3	12.27	60.4	26.8	35.14	19.5	26.9	35.95	27.6
.1	54.97	33.5	27.3	11.94	60.6	27.8	35.48	19.4	27.9	36.76	27.4
.1	54.22	33.3	28.3	11.56	60.9	28.8	35.84	19.2	28.9	37.67	27.1
.1	53.49	33.0	29.3	11.19	61.1	29.8	36.20	19.1	29.9	38.63	26.9
.1	52.83	32.7	30.3	10.79	61.2	30.8	36.55	19.0	30.9	39.63	26.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minori	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declin tion *North*
	h m	° '		h m	° '		h m	° '		h m	°
Mar.	1 19	+88 45	Mar	6 51	+87 13	Mar.	18 5	+86 36	Mar.	19 25	+88
	s	"		s	"		s	"		s	"
1.1	52.83	32.7	1.3	70.79	1.2	1.8	36.55	19.0	1.9	39.63	26.
2.1	52.24	32.5	2.3	70.38	1.4	2.8	36.91	18.9	2.9	40.63	26.
3.1	51.72	32.2	3.3	70.00	1.5	3.8	37.26	18.8	3.9	41.60	26.
4.1	51.25	31.9	4.3	69.63	1.6	4.8	37.59	18.8	4.9	42.54	26.
5.1	50.81	31.7	5.3	69.27	1.7	5.8	37.91	18.7	5.9	43.45	26.
6.1	50.38	31.5	6.3	68.95	1.8	6.8	38.23	18.6	6.9	44.31	25.
7.1	49.92	31.2	7.3	68.61	2.0	7.8	38.54	18.6	7.9	45.16	25.
8.1	49.45	31.0	8.3	68.29	2.1	8.8	38.84	18.5	8.9	45.99	25.
9.1	48.92	30.8	9.3	67.97	2.2	9.8	39.18	18.4	9.9	46.87	25.
10.1	48.36	30.5	10.3	67.60	2.4	10.8	39.53	18.3	10.9	47.80	25.
11.1	47.78	30.3	11.3	67.21	2.6	11.8	39.90	18.2	11.8	48.81	25.
12.1	47.20	30.0	12.3	66.81	2.7	12.8	40.28	18.1	12.8	49.88	24.
13.1	46.66	29.7	13.3	66.37	2.8	13.8	40.66	18.0	13.8	51.02	24.
14.1	46.17	29.4	14.3	65.91	3.0	14.8	41.07	18.0	14.8	52.20	24.
15.1	45.74	29.1	15.3	65.44	3.1	15.8	41.46	18.0	15.8	53.40	24.
16.1	45.40	28.7	16.3	64.99	3.1	16.8	41.84	18.0	16.8	54.59	24.
17.1	45.11	28.4	17.3	64.54	3.2	17.8	42.21	18.0	17.8	55.75	24.
18.1	44.87	28.1	18.3	64.13	3.2	18.8	42.57	18.0	18.8	56.84	24.
19.1	44.66	27.8	19.3	63.74	3.3	19.8	42.90	18.1	19.8	57.90	24.
20.1	44.45	27.5	20.3	63.37	3.3	20.8	43.22	18.1	20.8	58.89	23.
21.1	44.24	27.3	21.3	63.00	3.3	21.8	43.54	18.1	21.8	59.88	23.
22.0	43.98	27.0	22.3	62.64	3.4	22.7	43.88	18.1	22.8	60.83	23.
23.0	43.70	26.8	23.3	62.28	3.4	23.7	44.21	18.1	23.8	61.83	23.
24.0	43.39	26.5	24.3	61.91	3.5	24.7	44.55	18.0	24.8	62.88	23.
25.0	43.06	26.2	25.3	61.50	3.6	25.7	44.90	18.0	25.8	63.98	23.
26.0	42.76	25.9	26.3	61.08	3.6	26.7	45.27	18.1	26.8	65.13	23.
27.0	42.50	25.6	27.3	60.62	3.7	27.7	45.66	18.1	27.8	66.35	23.
28.0	42.27	25.3	28.3	60.16	3.7	28.7	46.04	18.2	28.8	67.61	23.
29.0	42.15	24.9	29.3	59.69	3.7	29.7	46.41	18.2	29.8	68.86	23.
30.0	42.09	24.5	30.3	59.23	3.7	30.7	46.77	18.3	30.8	70.11	23.
31.0	42.08	24.3	31.3	58.80	3.7	31.7	47.12	18.4	31.8	71.30	23.
32.0	42.13	24.0	32.2	58.38	3.6	32.7	47.45	18.5	32.8	72.44	23.

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	*δ* Ursæ Minoris.		Mean Solar Date.	*λ* Ursæ Minoris.	
Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
h m 1 19	° ′ +88 45	Apr.	h m 6 51	° ′ +87 13	Apr.	h m 18 5	° ′ +86 36	Apr.	h m 19 26	° ′ +88 58
s	″		s	″		s	″		s	″
42.13	24.0	1.2	58.38	3.6	1.7	47.45	18.5	1.8	12.44	23.0
42.18	23.6	2.2	58.00	3.5	2.7	47.77	18.7	2.8	13.51	23.1
42.24	23.3	3.2	57.62	3.5	3.7	48.07	18.8	3.8	14.55	23.1
42.27	23.1	4.2	57.26	3.5	4.7	48.38	18.9	4.8	15.58	23.1
42.26	22.8	5.2	56.90	3.5	5.7	48.69	18.9	5.8	16.61	23.0
42.21	22.5	6.2	56.51	3.4	6.7	49.02	19.0	6.8	17.67	23.0
42.16	22.2	7.2	56.11	3.4	7.7	49.35	19.1	7.8	18.79	23.0
42.07	21.9	8.2	55.70	3.4	8.7	49.70	19.1	8.8	19.97	22.9
42.02	21.6	9.2	55.25	3.4	9.7	50.07	19.2	9.8	21.21	22.9
42.03	21.3	10.2	54.79	3.4	10.7	50.44	19.4	10.8	22.49	22.9
42.09	20.9	11.2	54.33	3.3	11.7	50.80	19.5	11.8	23.78	22.9
42.23	20.6	12.2	53.87	3.2	12.7	51.14	19.7	12.8	25.07	23.0
42.42	20.3	13.2	53.42	3.1	13.7	51.47	19.9	13.8	26.32	23.1
42.69	19.9	14.2	53.02	3.0	14.7	51.78	20.1	14.8	27.50	23.2
42.99	19.6	15.2	52.62	2.9	15.7	52.06	20.2	15.8	28.63	23.2
43.30	19.3	16.2	52.27	2.7	16.7	52.34	20.4	16.8	29.69	23.3
43.61	19.1	17.2	51.94	2.6	17.7	52.59	20.6	17.7	30.70	23.4
43.89	18.8	18.2	51.60	2.5	18.7	52.86	20.8	18.7	31.69	23.5
44.13	18.6	19.2	51.27	2.4	19.7	53.12	20.9	19.7	32.67	23.6
44.34	18.3	20.2	50.94	2.3	20.7	53.39	21.1	20.7	33.70	23.6
44.52	18.0	21.2	50.59	2.2	21.7	53.67	21.2	21.7	34.75	23.7
44.73	17.8	22.2	50.22	2.1	22.7	53.96	21.4	22.7	35.85	23.7
44.96	17.5	23.2	49.82	2.0	23.7	54.27	21.5	23.7	37.01	23.8
45.22	17.2	24.2	49.43	1.9	24.7	54.56	21.7	24.7	38.19	23.9
45.55	16.9	25.2	49.02	1.8	25.7	54.86	22.0	25.7	39.39	24.0
45.97	16.5	26.2	48.62	1.6	26.7	55.14	22.2	26.7	40.54	24.1
46.45	16.2	27.2	48.25	1.4	27.7	55.40	22.5	27.7	41.67	24.3
46.97	15.9	28.2	47.89	1.2	28.6	55.65	22.7	28.7	42.72	24.5
47.53	15.7	29.2	47.56	1.0	29.6	55.88	23.0	29.7	43.72	24.6
48.08	15.4	30.2	47.28	0.8	30.6	56.09	23.2	30.7	44.66	24.8
48.63	15.2	31.2	46.98	0.6	31.6	56.29	23.5	31.7	45.54	25.0
49.12	14.9									

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Mino	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Decl tio *Nor*
	h m	° ′		h m	° ′		h m	° ′		h m	°
May	1 19	+88 45	May	6 51	+87 12	May	18 5	+86 36	May	19 26	+88
	s	″		s	″		s	″		s	
1.9	49.12	14.9	1.2	46.98	60.6	1.6	56.29	23.5	1.7	45.54	2
2.9	49.57	14.7	2.2	46.71	60.4	2.6	56.50	23.7	2.7	46.43	2
3.9	50.00	14.5	3.2	46.43	60.2	3.6	56.71	23.9	3.7	47.31	2
4.9	50.40	14.2	4.2	46.14	60.1	4.6	56.93	24.1	4.6	48.23	2
5.9	50.82	14.0	5.2	45.81	59.9	5.6	57.18	24.3	5.6	49.21	2
6.9	51.26	13.7	6.2	45.49	59.8	6.6	57.42	24.5	6.6	50.24	2
7.9	51.76	13.4	7.1	45.14	59.6	7.6	57.67	24.8	7.6	51.30	2
8.9	52.34	13.1	8.1	44.79	59.4	8.6	57.92	25.0	8.6	52.38	2
9.9	52.97	12.8	9.1	44.42	59.2	9.6	58.17	25.3	9.6	53.45	2
10.9	53.67	12.6	10.1	44.10	58.9	10.6	58.38	25.6	10.6	54.50	2
11.9	54.41	12.4	11.1	43.79	58.7	11.6	58.59	25.9	11.6	55.48	2
12.9	55.17	12.1	12.1	43.52	58.4	12.6	58.76	26.2	12.6	56.38	2
13.9	55.92	11.9	13.1	43.28	58.2	13.6	58.90	26.5	13.6	57.20	2
14.9	56.65	11.8	14.1	43.08	57.9	14.6	59.04	26.8	14.6	57.96	2
15.9	57.34	11.6	15.1	42.87	57.7	15.6	59.17	27.1	15.6	58.67	2
16.9	57.98	11.4	16.1	42.68	57.4	16.6	59.30	27.4	16.6	59.37	2
17.9	58.62	11.2	17.1	42.49	57.2	17.6	59.43	27.6	17.6	60.08	2
18.9	59.22	11.1	18.1	42.28	57.0	18.6	59.57	27.9	18.6	60.81	2
19.9	59.85	10.9	19.1	42.07	56.8	19.6	59.72	28.1	19.6	61.59	2
20.9	60.52	10.6	20.1	41.83	56.6	20.6	59.87	28.4	20.6	62.39	2
21.9	61.24	10.4	21.1	41.57	56.3	21.6	60.04	28.7	21.6	63.23	2
22.9	62.01	10.2	22.1	41.32	56.1	22.6	60.18	29.0	22.6	64.07	2
23.9	62.86	10.0	23.1	41.08	55.8	23.6	60.32	29.3	23.6	64.90	2
24.9	63.77	9.8	24.1	40.84	55.5	24.6	60.45	29.7	24.6	65.68	2
25.9	64.70	9.6	25.1	40.65	55.2	25.6	60.54	30.0	25.6	66.39	2
26.9	65.63	9.5	26.1	40.47	54.9	26.6	60.62	30.4	26.6	67.03	3
27.9	66.55	9.3	27.1	40.32	54.6	27.6	60.68	30.7	27.6	67.60	3
28.9	67.43	9.2	28.1	40.22	54.3	28.6	60.73	31.0	28.6	68.11	3
29.9	68.26	9.1	29.1	40.11	54.0	29.6	60.77	31.3	29.6	68.59	3
30.9	69.06	9.0	30.1	40.01	53.7	30.6	60.81	31.6	30.6	69.07	3
31.9	69.80	8.8	31.1	39.90	53.5	31.6	60.87	31.9	31.6	69.57	3
32.9	70.56	8.7	32.1	39.77	53.2	32.6	60.95	32.2	32.6	70.10	3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
h m	° ′		h m	° ′		h m	° ′		h m	° ′
1 20	+88 45	June	6 51	+87 12	June	18 5	+86 36	June	19 27	+88 58
s	″		s	″		s	″		s	″
10.56	8.7	1.1	39.77	53.2	1.6	60.95	32.2	1.6	10.10	31.7
11.31	8.6	2.1	39.62	52.9	2.6	61.03	32.5	2.6	10.68	32.0
12.12	8.4	3.1	39.48	52.7	3.5	61.10	32.8	3.6	11.30	32.2
12.97	8.2	4.1	39.30	52.4	4.5	61.19	33.1	4.6	11.95	32.5
13.91	8.1	5.1	39.13	52.1	5.5	61.27	33.4	5.6	12.58	32.8
14.88	8.0	6.1	38.98	51.8	6.5	61.33	33.8	6.6	13.19	33.1
15.90	7.8	7.1	38.85	51.5	7.5	61.37	34.1	7.6	13.74	33.4
16.95	7.7	8.1	38.74	51.1	8.5	61.38	34.5	8.6	14.22	33.7
17.99	7.6	9.1	38.67	50.8	9.5	61.37	34.9	9.6	14.61	34.1
19.02	7.6	10.1	38.65	50.5	10.5	61.34	35.2	10.6	14.93	34.4
20.01	7.5	11.1	38.64	50.1	11.5	61.30	35.5	11.6	15.17	34.7
20.94	7.5	12.1	38.64	49.8	12.5	61.26	35.8	12.6	15.39	35.0
21.82	7.5	13.0	38.66	49.5	13.5	61.21	36.1	13.6	15.60	35.3
22.69	7.4	14.0	38.66	49.2	14.5	61.18	36.4	14.6	15.83	35.6
23.55	7.4	15.0	38.64	49.0	15.5	61.15	36.7	15.6	16.09	35.9
24.43	7.3	16.0	38.62	48.7	16.5	61.12	37.0	16.6	16.39	36.2
25.36	7.2	17.0	38.58	48.4	17.5	61.11	37.3	17.6	16.71	36.5
26.33	7.2	18.0	38.51	48.1	18.5	61.09	37.6	18.6	17.05	36.8
27.38	7.1	19.0	38.49	47.8	19.5	61.06	38.0	19.6	17.37	37.1
28.48	7.0	20.0	38.45	47.4	20.5	61.00	38.3	20.6	17.66	37.5
29.60	7.0	21.0	38.44	47.1	21.5	60.94	38.7	21.6	17.88	37.8
30.74	7.0	22.0	38.47	46.7	22.5	60.85	39.1	22.6	18.04	38.2
31.84	6.9	23.0	38.53	46.4	23.5	60.74	39.4	23.6	18.09	38.5
32.91	7.0	24.0	38.61	46.0	24.5	60.62	39.8	24.6	18.10	38.9
33.94	7.0	25.0	38.70	45.7	25.5	60.49	40.1	25.6	18.05	39.2
34.92	7.0	26.0	38.82	45.4	26.5	60.35	40.4	26.6	17.98	39.6
35.85	7.1	27.0	38.92	45.1	27.5	60.23	40.7	27.6	17.94	39.9
36.76	7.1	28.0	39.01	44.8	28.5	60.12	41.0	28.6	17.91	40.2
37.65	7.1	29.0	39.08	44.5	29.5	60.02	41.2	29.5	17.92	40.5
38.58	7.1	30.0	39.14	44.2	30.5	59.92	41.5	30.5	17.98	40.8
39.55	7.1	31.0	39.17	43.9	31.5	59.84	41.8	31.5	18.07	41.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minor	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Decli tio *Nor*
	h m	° ′		h m	° ′		h m	° ′		h m	°
July	1 20	+88 45	July	6 51	+87 12	July	18 5	+86 36	July	19 27	+88
	s	″		s	″		s	″		s	
1.8	39.55	7.1	1.0	39.17	43.93	1.5	59.84	41.8	1.5	18.07	4
2.8	40.58	7.0	2.0	39.21	43.62	2.5	59.74	42.1	2.5	18.18	4
3.8	41.66	7.0	3.0	39.26	43.29	3.5	59.63	42.5	3.5	18.24	4
4.8	42.78	7.1	3.9	39.33	42.94	4.5	59.51	42.8	4.5	18.26	4
5.8	43.93	7.1	4.9	39.42	42.60	5.5	59.36	43.2	5.5	18.21	4
6.8	45.07	7.2	5.9	39.55	42.25	6.5	59.18	43.5	6.5	18.08	4
7.8	46.20	7.3	6.9	39.72	41.89	7.5	58.99	43.8	7.5	17.88	4
8.8	47.28	7.4	7.9	39.91	41.55	8.5	58.78	44.1	8.5	17.60	4
9.8	48.30	7.5	8.9	40.12	41.23	9.5	58.57	44.4	9.5	17.26	4
10.7	49.28	7.6	9.9	40.32	40.93	10.5	58.37	44.7	10.5	16.92	4
11.7	50.21	7.7	10.9	40.54	40.63	11.5	58.15	45.0	11.5	16.58	4
12.7	51.11	7.8	11.9	40.74	40.35	12.4	57.95	45.2	12.5	16.27	4
13.7	52.04	7.9	12.9	40.93	40.08	13.4	57.76	45.5	13.5	15.99	4
14.7	52.98	7.9	13.9	41.10	39.80	14.4	57.57	45.8	14.5	15.76	4
15.7	53.97	8.0	14.9	41.25	39.51	15.4	57.40	46.0	15.5	15.53	4
16.7	55.00	8.1	15.9	41.40	39.20	16.4	57.21	46.3	16.5	15.31	4
17.7	56.10	8.2	16.9	41.57	38.88	17.4	57.00	46.7	17.5	15.05	4
18.7	57.23	8.3	17.9	41.75	38.54	18.4	56.78	47.0	18.5	14.75	4
19.7	58.36	8.4	18.9	41.98	38.19	19.4	56.52	47.3	19.5	14.36	4
20.7	59.49	8.5	19.9	42.22	37.83	20.4	56.26	47.6	20.5	13.91	4
21.7	60.57	8.7	20.9	42.49	37.51	21.4	55.98	47.9	21.5	13.36	4
22.7	61.61	8.9	21.9	42.79	37.19	22.4	55.71	48.2	22.5	12.77	4
23.7	62.58	9.0	22.9	43.10	36.90	23.4	55.41	48.4	23.5	12.15	4
24.7	63.51	9.2	23.9	43.41	36.62	24.4	55.13	48.7	24.5	11.52	4
25.7	64.38	9.4	24.9	43.70	36.36	25.4	54.85	48.9	25.5	10.93	4
26.7	65.25	9.5	25.9	43.98	36.11	26.4	54.61	49.1	26.5	10.39	4
27.7	66.11	9.7	26.9	44.23	35.86	27.4	54.36	49.3	27.5	9.87	4
28.7	67.01	9.8	27.9	44.48	35.60	28.4	54.11	49.6	28.5	9.39	5
29.7	67.95	10.0	28.9	44.71	35.33	29.4	53.87	49.8	29.5	8.93	5
30.7	68.97	10.1	29.9	44.94	35.04	30.4	53.62	50.1	30.5	8.47	5
31.7	70.00	10.2	30.9	45.20	34.73	31.4	53.36	50.4	31.5	7.98	5
32.7	71.06	10.4	31.9	45.47	34.43	32.4	53.06	50.6	32.5	7.42	5

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

an ar te.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
g.	1 21	+88 45	Aug.	6 51	+87 12	Aug.	18 5	+86 36	Aug.	19 26	+88 58
	s	″		s	″		s	″		s	″
.7	11.06	10.4	1.9	45.78	34.1	1.4	53.06	50.6	1.5	67.42	51.4
.7	12.14	10.6	2.9	46.13	33.8	2.4	52.76	50.9	2.4	66.77	51.8
.7	13.17	10.8	3.9	46.50	33.5	3.4	52.42	51.2	3.4	66.06	52.1
.7	14.18	11.1	4.9	46.88	33.2	4.4	52.07	51.4	4.4	65.28	52.4
.7	15.12	11.3	5.9	47.27	33.0	5.4	51.73	51.6	5.4	64.44	52.8
.7	16.02	11.5	6.9	47.67	32.7	6.4	51.37	51.8	6.4	63.57	53.1
.7	16.86	11.8	7.9	48.06	32.5	7.4	51.02	52.0	7.4	62.70	53.4
.7	17.67	12.0	8.9	48.43	32.3	8.4	50.68	52.2	8.4	61.86	53.6
.7	18.46	12.3	9.9	48.78	32.0	9.4	50.34	52.4	9.4	61.05	53.9
.7	19.27	12.5	10.9	49.12	31.8	10.4	50.02	52.6	10.4	60.27	54.2
.7	20.11	12.7	11.9	49.44	31.6	11.4	49.69	52.8	11.4	59.54	54.4
.7	20.99	12.9	12.9	49.77	31.3	12.4	49.39	53.0	12.4	58.80	54.7
.7	21.93	13.1	13.9	50.12	31.0	13.4	49.06	53.2	13.4	58.05	55.0
.7	22.90	13.3	14.9	50.50	30.8	14.4	48.72	53.4	14.4	57.26	55.3
.6	23.87	13.6	15.9	50.89	30.5	15.4	48.35	53.6	15.4	56.42	55.6
.6	24.86	13.8	16.9	51.32	30.2	16.3	47.97	53.9	16.4	55.48	56.0
.6	25.80	14.1	17.9	51.77	29.9	17.3	47.58	54.1	17.4	54.48	56.3
.6	26.69	14.4	18.9	52.23	29.7	18.3	47.17	54.3	18.4	53.42	56.6
.6	27.51	14.7	19.9	52.69	29.5	19.3	46.77	54.4	19.4	52.32	56.9
.6	28.27	15.0	20.9	53.16	29.3	20.3	46.37	54.6	20.4	51.21	57.1
.6	28.98	15.3	21.9	53.58	29.1	21.3	45.97	54.7	21.4	50.11	57.4
.6	29.65	15.6	22.9	54.01	29.0	22.3	45.60	54.8	22.4	49.08	57.6
.6	30.31	15.8	23.9	54.40	28.8	23.3	45.25	54.9	23.4	48.08	57.8
.6	31.00	16.1	24.8	54.78	28.6	24.3	44.89	55.0	24.4	47.13	58.0
.6	31.72	16.3	25.8	55.16	28.4	25.3	44.53	55.2	25.4	46.21	58.3
.6	32.49	16.6	26.8	55.54	28.2	26.3	44.19	55.3	26.4	45.30	58.5
.6	33.29	16.9	27.8	55.94	28.0	27.3	43.83	55.5	27.4	44.37	58.8
6	34.11	17.1	28.8	56.38	27.7	28.3	43.45	55.7	28.4	43.39	59.1
6	34.96	17.4	29.8	56.84	27.5	29.3	43.06	55.9	29.4	42.33	59.3
6	35.78	17.7	30.8	57.34	27.3	30.3	42.63	56.0	30.4	41.21	59.6
6	36.57	18.1	31.8	57.86	27.1	31.3	42.20	56.1	31.4	40.03	59.9
6	37.31	18.4	32.8	58.38	26.9	32.3	41.75	56.3	32.4	38.77	60.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minor	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Decli tio *Nor.*
	h m	° '		h m	° '		h m	° '		h m	'
Sept.	1 21	+88 45	Sept.	6 51	+87 12	Sept.	18 5	+86 36	Sept.	19 26	+88
	s	"		s	"		s	"		s	
1.6	37.31	18.4	1.8	58.38	26.9	1.3	41.75	56.3	1.4	38.77	
2.6	37.97	18.8	2.8	58.90	26.7	2.3	41.31	56.4	2.4	37.50	
3.6	38.57	19.2	3.8	59.41	26.6	3.3	40.87	56.5	3.4	36.20	
4.6	39.14	19.5	4.8	59.91	26.5	4.3	40.46	56.5	4.4	34.94	
5.6	39.67	19.8	5.8	60.40	26.3	5.3	40.04	56.6	5.4	33.72	
6.6	40.21	20.1	6.8	60.87	26.2	6.3	39.63	56.6	6.4	32.52	
7.6	40.76	20.5	7.8	61.31	26.1	7.3	39.23	56.7	7.4	31.38	
8.6	41.35	20.8	8.8	61.75	25.9	8.3	38.84	56.8	8.3	30.27	
9.6	41.99	21.1	9.8	62.21	25.8	9.3	38.45	56.9	9.3	29.14	
10.6	42.68	21.4	10.8	62.68	25.6	10.3	38.04	57.0	10.3	28.00	
11.6	43.37	21.7	11.8	63.18	25.4	11.3	37.62	57.1	11.3	26.80	
12.6	44.06	22.0	12.8	63.69	25.2	12.3	37.18	57.2	12.3	25.55	
13.6	44.74	22.4	13.8	64.25	25.1	13.3	36.73	57.3	13.3	24.22	
14.6	45.35	22.8	14.8	64.82	24.9	14.3	36.27	57.4	14.3	22.84	
15.6	45.91	23.2	15.8	65.38	24.8	15.3	35.80	57.4	15.3	21.39	
16.6	46.39	23.5	16.8	65.94	24.7	16.3	35.33	57.4	16.3	19.95	
17.6	46.82	23.9	17.8	66.48	24.6	17.3	34.88	57.4	17.3	18.51	
18.6	47.18	24.3	18.8	67.00	24.6	18.3	34.43	57.4	18.3	17.11	
19.6	47.54	24.6	19.8	67.49	24.5	19.3	34.03	57.4	19.3	15.78	
20.6	47.89	25.0	20.8	67.98	24.4	20.3	33.63	57.4	20.3	14.50	
21.5	48.26	25.3	21.8	68.44	24.3	21.3	33.23	57.4	21.3	13.25	
22.5	48.69	25.6	22.8	68.89	24.2	22.3	32.83	57.5	22.3	12.04	
23.5	49.16	25.9	23.8	69.37	24.1	23.3	32.45	57.5	23.3	10.83	
24.5	49.64	26.3	24.8	69.87	24.0	24.3	32.03	57.5	24.3	9.59	
25.5	50.14	26.6	25.8	70.39	23.9	25.2	31.60	57.6	25.3	8.29	
26.5	50.65	27.0	26.8	70.95	23.8	26.2	31.17	57.6	26.3	6.93	
27.5	51.11	27.4	27.8	71.53	23.7	27.2	30.70	57.6	27.3	5.50	
28.5	51.52	27.8	28.8	72.12	23.6	28.2	30.24	57.6	28.3	4.02	
29.5	51.86	28.2	29.8	72.70	23.6	29.2	29.75	57.6	29.3	2.50	
30.5	52.14	28.7	30.8	73.29	23.6	30.2	29.29	57.5	30.3	0.96	
31.5	52.36	29.1	31.8	73.85	23.5	31.2	28.83	57.5	31.3	59.46	

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
Oct.	1 21	+88 45	Oct.	6 52	+87 12	Oct.	18 5	+86 36	Oct.	19 25	+88 59
	s	″		s	″		s	″		s	″
1.5	52.36	29.1	1.8	13.85	23.5	1.2	28.83	57.5	1.3	59.46	5.3
2.5	52.55	29.5	2.7	14.40	23.5	2.2	28.40	57.4	2.3	57.98	5.3
3.5	52.72	29.8	3.7	14.92	23.5	3.2	27.97	57.3	3.3	56.57	5.4
4.5	52.91	30.2	4.7	15.43	23.5	4.2	27.56	57.2	4.3	55.20	5.4
5.5	53.12	30.6	5.7	15.91	23.5	5.2	27.15	57.2	5.3	53.85	5.5
6.5	53.36	30.9	6.7	16.41	23.5	6.2	26.75	57.1	6.3	52.53	5.6
7.5	53.65	31.3	7.7	16.92	23.4	7.2	26.34	57.1	7.3	51.21	5.7
8.5	53.97	31.6	8.7	17.46	23.4	8.2	25.92	57.1	8.3	49.83	5.8
9.5	54.28	32.0	9.7	18.00	23.3	9.2	25.48	57.0	9.3	48.42	5.9
10.5	54.57	32.4	10.7	18.57	23.3	10.2	25.03	57.0	10.3	46.94	6.0
11.5	54.82	32.8	11.7	19.16	23.2	11.2	24.58	57.0	11.3	45.41	6.1
12.5	55.01	33.2	12.7	19.75	23.2	12.2	24.13	56.9	12.3	43.85	6.1
13.5	55.13	33.7	13.7	20.33	23.3	13.2	23.66	56.8	13.3	42.26	6.2
14.5	55.19	34.1	14.7	20.91	23.3	14.2	23.22	56.7	14.3	40.70	6.2
15.5	55.17	34.5	15.7	21.45	23.4	15.2	22.78	56.5	15.3	39.16	6.2
16.5	55.13	34.9	16.7	21.97	23.4	16.2	22.39	56.4	16.2	37.69	6.2
17.5	55.08	35.2	17.7	22.47	23.5	17.2	22.00	56.2	17.2	36.27	6.2
18.5	55.04	35.6	18.7	22.95	23.5	18.2	21.61	56.1	18.2	34.92	6.2
19.5	55.05	35.9	19.7	23.41	23.6	19.2	21.25	56.0	19.2	33.61	6.2
20.5	55.09	36.3	20.7	23.89	23.6	20.2	20.89	55.9	20.2	32.32	6.2
21.5	55.17	36.6	21.7	24.38	23.6	21.2	20.52	55.8	21.2	31.02	6.2
22.5	55.24	37.0	22.7	24.89	23.7	22.2	20.13	55.6	22.2	29.69	6.3
23.5	55.34	37.4	23.7	25.42	23.7	23.2	19.73	55.6	23.2	28.28	6.3
24.5	55.40	37.8	24.7	25.99	23.7	24.2	19.31	55.5	24.2	26.82	6.3
25.5	55.43	38.2	25.7	26.56	23.7	25.2	18.89	55.3	25.2	25.30	6.3
26.5	55.39	38.6	26.7	27.13	23.8	26.2	18.46	55.2	26.2	23.73	6.3
27.5	55.27	39.0	27.7	27.70	23.9	27.2	18.04	55.0	27.2	22.17	6.3
28.4	55.09	39.4	28.7	28.26	24.0	28.1	17.64	54.8	28.2	20.61	6.2
29.4	54.86	39.8	29.7	28.78	24.2	29.1	17.25	54.6	29.2	19.10	6.2
30.4	54.61	40.2	30.7	29.29	24.3	30.1	16.87	54.4	30.2	17.65	6.1
31.4	54.35	40.6	31.7	29.78	24.4	31.1	16.51	54.2	31.2	16.26	6.0
32.4	54.13	40.9	32.7	30.23	24.5	32.1	16.17	54.0	32.2	14.92	5.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
Nov.	1 21	+88 45	Nov.	6 52	+87 12	Nov.	18 5	+86 36	Nov.	19 24	+88 59
	s	″		s	″		s	″		s	″
1.4	54.13	40.9	1.7	30.23	24.5	1.1	16.17	54.0	1.2	74.92	5.9
2.4	53.93	41.2	2.7	30.69	24.6	2.1	15.83	53.8	2.2	73.63	5.9
3.4	53.76	41.6	3.7	31.15	24.7	3.1	15.48	53.6	3.2	72.36	5.8
4.4	53.65	41.9	4.7	31.62	24.8	4.1	15.13	53.5	4.2	71.06	5.7
5.4	53.54	42.3	5.7	32.13	24.9	5.1	14.79	53.3	5.2	69.72	5.7
6.4	53.40	42.6	6.6	32.64	25.0	6.1	14.42	53.1	6.2	68.34	5.7
7.4	53.25	43.0	7.6	33.17	25.1	7.1	14.04	53.0	7.2	66.92	5.6
8.4	53.03	43.4	8.6	33.71	25.2	8.1	13.67	52.8	8.2	65.46	5.6
9.4	52.74	43.8	9.6	34.24	25.3	9.1	13.30	52.5	9.2	63.98	5.5
10.4	52.40	44.2	10.6	34.76	25.5	10.1	12.93	52.3	10.2	62.52	5.4
11.4	51.97	44.6	11.6	35.26	25.7	11.1	12.59	52.0	11.2	61.09	5.2
12.4	51.50	44.9	12.6	35.71	25.9	12.1	12.26	51.8	12.2	59.72	5.1
13.4	51.02	45.2	13.6	36.15	26.1	13.1	11.96	51.5	13.2	58.41	4.9
14.4	50.55	45.6	14.6	36.56	26.3	14.1	11.69	51.2	14.2	57.18	4.8
15.4	50.09	45.9	15.6	36.95	26.5	15.1	11.42	51.0	15.2	56.01	4.6
16.4	49.68	46.2	16.6	37.33	26.6	16.1	11.16	50.7	16.2	54.87	4.5
17.4	49.31	46.5	17.6	37.72	26.8	17.1	10.90	50.5	17.2	53.74	4.4
18.4	48.96	46.8	18.6	38.14	26.9	18.1	10.63	50.3	18.2	52.59	4.2
19.4	48.62	47.1	19.6	38.56	27.1	19.1	10.34	50.1	19.2	51.40	4.1
20.4	48.29	47.4	20.6	39.03	27.2	20.1	10.05	49.9	20.1	50.18	4.0
21.4	47.88	47.8	21.6	39.50	27.4	21.1	9.73	49.6	21.1	48.89	3.9
22.4	47.42	48.2	22.6	39.97	27.6	22.1	9.43	49.4	22.1	47.57	3.8
23.4	46.91	48.5	23.6	40.43	27.8	23.1	9.13	49.1	23.1	46.24	3.6
24.4	46.32	48.9	24.6	40.88	28.0	24.1	8.85	48.8	24.1	44.91	3.4
25.4	45.67	49.2	25.6	41.30	28.3	25.1	8.57	48.5	25.1	43.63	3.2
26.4	45.01	49.5	26.6	41.71	28.5	26.1	8.32	48.2	26.1	42.42	3.0
27.4	44.33	49.8	27.6	42.07	28.8	27.1	8.09	47.9	27.1	41.27	2.8
28.4	43.67	50.1	28.6	42.41	29.0	28.1	7.87	47.5	28.1	40.20	2.6
29.4	43.06	50.3	29.6	42.74	29.3	29.1	7.67	47.2	29.1	39.18	2.3
30.4	42.46	50.6	30.6	43.08	29.5	30.1	7.47	47.0	30.1	38.21	2.1
31.4	41.91	50.8	31.6	43.41	29.7	31.1	7.27	46.7	31.1	37.24	2.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
Dec.	1 21	+88 45	Dec.	6 52	+87 12	Dec.	18 5	+86 36	Dec.	19 24	+88 58
	s	″		s	″		s	″		s	″
1.4	41.91	50.8	1.6	43.41	29.7	1.1	7.27	46.7	1.1	37.24	62.0
2.4	41.39	51.1	2.6	43.76	29.9	2.1	7.05	46.4	2.1	36.24	61.8
3.3	40.86	51.4	3.6	44.13	30.1	3.1	6.82	46.2	3.1	35.20	61.6
4.3	40.32	51.7	4.6	44.50	30.3	4.0	6.59	45.9	4.1	34.14	61.4
5.3	39.72	52.0	5.6	44.89	30.5	5.0	6.37	45.6	5.1	33.03	61.2
6.3	39.07	52.3	6.6	45.28	30.8	6.0	6.15	45.3	6.1	31.91	61.0
7.3	38.34	52.5	7.6	45.65	31.2	7.0	5.93	45.0	7.1	30.78	60.8
8.3	37.55	52.8	8.6	46.00	31.5	8.0	5.73	44.6	8.1	29.71	60.6
9.3	36.70	53.1	9.6	46.30	31.8	9.0	5.56	44.3	9.1	28.69	60.3
10.3	35.85	53.3	10.6	46.59	32.1	10.0	5.42	43.9	10.1	27.75	60.0
11.3	34.97	53.5	11.6	46.84	32.4	11.0	5.29	43.6	11.1	26.89	59.7
12.3	34.13	53.7	12.6	47.06	32.6	12.0	5.17	43.2	12.1	26.11	59.4
13.3	33.33	53.9	13.6	47.27	32.8	13.0	5.09	42.9	13.1	25.37	59.2
14.3	32.59	54.1	14.5	47.49	33.1	14.0	4.99	42.6	14.1	24.69	58.9
15.3	31.86	54.3	15.5	47.72	33.4	15.0	4.89	42.3	15.1	23.98	58.7
16.3	31.17	54.5	16.5	47.95	33.6	16.0	4.78	42.0	16.1	23.27	58.4
17.3	30.47	54.7	17.5	48.22	33.9	17.0	4.66	41.7	17.1	22.51	58.2
18.3	29.74	54.9	18.5	48.50	34.2	18.0	4.54	41.4	18.1	21.72	58.0
19.3	28.98	55.1	19.5	48.78	34.4	19.0	4.40	41.1	19.1	20.86	57.7
20.3	28.14	55.4	20.5	49.05	34.7	20.0	4.27	40.8	20.1	20.03	57.5
21.3	27.26	55.6	21.5	49.31	35.0	21.0	4.16	40.4	21.1	19.17	57.2
22.3	26.32	55.8	22.5	49.55	35.3	22.0	4.06	40.1	22.1	18.38	56.9
23.3	25.34	56.0	23.5	49.76	35.6	22.9	3.97	39.7	23.1	17.65	56.6
24.3	24.34	56.2	24.5	49.94	35.9	23.9	3.91	39.3	24.1	16.98	56.2
25.3	23.36	56.3	25.5	50.09	36.3	24.9	3.87	38.9	25.1	16.40	55.9
26.3	22.42	56.4	26.5	50.19	36.6	25.9	3.84	38.6	26.0	15.88	55.6
27.3	21.51	56.5	27.5	50.31	37.0	26.9	3.83	38.3	27.0	15.41	55.3
28.3	20.66	56.6	28.5	50.44	37.3	27.9	3.82	38.0	28.0	14.97	55.0
29.3	19.85	56.8	29.5	50.56	37.5	28.9	3.80	37.7	29.0	14.54	54.7
30.3	19.04	56.9	30.5	50.71	37.8	29.9	3.78	37.4	30.0	14.09	54.5
31.3	18.23	57.0	31.5	50.86	38.0	30.9	3.73	37.1	31.0	13.60	54.2
32.3	17.42	57.2	32.5	51.03	38.3	31.9	3.70	36.8	32.0	13.07	53.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ.		γ Pegasi. (*Algenib.*)		β Hydri.		12 Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension	Declination *South.*	Right Ascension.	Decli
	h m 0 3	° ′ +28 30	h m 0 7	° ′ +14 36	h m 0 20	° ′ −77 49	h m 0 24	—
	s	″	s	″	s	″	s	″
Jan. 0.2	0.59 −.13	69.7 −0.8	52.92 −.11	26.0 −0.7	19.21− .92	100.7 +0.8	44.26 −.10	54.
10.2	0.46 .12	68.8 1.0	52.81 .10	25.3 0.8	18.31 .87	99.6 1.4	44.16 .10	54.
20.2	0.34 .12	67.7 1.2	52.71 .09	24.3 0.9	17.47 .80	97.9 2.0	44.06 .09	55.
30.2	0.23 .10	66.3 1.4	52.62 .08	23.4 1.0	16.71 .71	95.6 2.5	43.97 .09	55.
Feb. 9.1	0.14 .08	64.9 1.5	52.55 .06	22.4 1.0	16.05 .60	92.9 2.9	43.89 .07	55.
19.1	0.08 −.05	63.3 −1.6	52.49 −.04	21.4 −0.9	15.52− .47	89.8 +3.3	43.83 −.05	55.
29.1	0.05 −.02	61.7 1.5	52.47 −.01	20.6 0.8	15.12 .33	86.4 3.6	43.79 −.02	55.
Mar. 10.0	0.05 +.02	60.2 1.4	52.47 +.02	19.8 0.6	14.86 .18	82.7 3.8	43.78 +.01	55.
20.0	0.09 .07	58.9 1.2	52.51 .06	19.3 0.4	14.75− .03	78.9 3.9	43.80 .04	54.
30.0	0.18 .11	57.8 1.0	52.60 .10	18.9 −0.2	14.81+ .13	75.0 3.9	43.87 .08	53.
Apr. 9.0	0.32 +.16	56.9 −0.7	52.72 +.14	18.9 +0.1	15.01+ .29	71.1 +3.8	43.97 +.12	52.
18.9	0.50 .20	56.4 −0.3	52.88 .18	19.1 0.4	15.38 .44	67.3 3.7	44.11 .16	51.
28.9	0.73 .24	56.3 +0.1	53.09 .22	19.7 0.7	15.90 .58	63.7 3.5	44.29 .20	49.
May 8.9	0.99 .28	56.5 0.4	53.33 .26	20.6 1.0	16.55 .72	60.3 3.2	44.51 .24	48.
18.8	1.29 .31	57.1 0.8	53.60 .29	21.7 1.3	17.33 .84	57.3 2.8	44.76 .27	46.
28.8	1.62 +.33	58.2 +1.2	53.90 +.31	23.2 +1.6	18.23+ .94	54.6 +2.4	45.04 +.29	44.
June 7.8	1.96 .35	59.5 1.5	54.22 .32	24.9 1.8	19.21 1.02	52.4 2.0	45.34 .31	42.
17.8	2.32 .35	61.2 1.8	54.55 .33	26.8 2.0	20.26 1.07	50.7 1.4	45.66 .32	40.
27.7	2.67 .35	63.2 2.1	54.88 .33	28.9 2.1	21.34 1.09	49.6 0.9	45.99 .32	37.
July 7.7	3.01 .34	65.4 2.3	55.20 .32	31.1 2.2	22.44 1.09	48.9 +0.3	46.31 .31	35.
17.7	3.34 +.32	67.8 +2.4	55.51 +.30	33.3 +2.2	23.52+1.05	48.9 −0.2	46.62 +.30	34.
27.7	3.64 .29	70.3 2.5	55.81 .27	35.5 2.2	24.55 .99	49.4 0.8	46.91 .28	32.
Aug. 6.6	3.92 .25	72.9 2.6	56.07 .24	37.6 2.1	25.50 .89	50.5 1.4	47.18 .25	30.
16.6	4.15 .22	75.4 2.5	56.29 .21	39.7 2.0	26.34 .77	52.1 1.8	47.42 .22	29.
26.6	4.35 .18	78.0 2.5	56.49 .17	41.6 1.8	27.04 .62	54.2 2.3	47.62 .19	28.
Sept. 5.5	4.51 +.14	80.4 +2.4	56.64 +.13	43.4 +1.6	27.58+ .45	56.7 −2.6	47.79 +.15	27.
15.5	4.63 .10	82.7 2.2	56.76 .10	44.9 1.4	27.94 .27	59.4 2.8	47.92 .11	27.
25.5	4.70 .06	84.8 2.0	56.84 .06	46.2 1.2	28.12+ .08	62.4 3.0	48.02 .08	27.
Oct. 5.5	4.74 +.02	86.7 1.8	56.88 +.03	47.3 1.0	28.11− .11	65.4 3.0	48.08 .04	27.
15.4	4.74 −.01	88.3 1.5	56.90 .00	48.2 0.8	27.91 .29	68.4 2.9	48.10 +.01	27.
25.4	4.72 −.04	89.8 +1.3	56.88 −.03	48.9 +0.5	27.53− .46	71.2 −2.7	48.10 −.02	28.
Nov. 4.4	4.66 .07	90.9 1.0	56.84 .05	49.3 0.3	26.98 .61	73.7 2.3	48.07 .04	28.
14.4	4.58 .09	91.7 0.7	56.77 .07	49.5 +0.1	26.30 .74	75.9 1.9	48.02 .06	29.
24.3	4.49 .10	92.2 0.4	56.69 .09	49.5 −0.1	25.51 .84	77.6 1.4	47.95 .08	29.
Dec. 4.3	4.37 .12	92.4 +0.1	56.60 .10	49.3 0.3	24.63 .90	78.7 0.8	47.86 .09	30.
14.3	4.25 −.13	92.3 −0.2	56.50 −.11	48.9 −0.5	23.70− .93	79.2 −0.2	47.77 −.10	31.
24.2	4.12 .13	91.9 0.6	56.39 .11	48.3 0.6	22.76 .94	79.1 +0.4	47.67 .10	32.
34.2	3.99 −.13	91.2 −0.9	56.28 −.11	47.6 0.7	21.82− .92	78.4 +1.0	47.58 −.10	32

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Cassiopeiæ.		*β* Ceti.		21 Cassiopeiæ.		*ε* Piscium.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	h m 0 34	° ′ +55 57	h m 0 38	° ′ −18 32	h m 0 38	° ′ +74 25	h m 0 57	° ′ + 7 19
	s	″	s	″	s	″	s	″
Jan 0.3	35.99 −.27	80.9 0.0	22.79 −.11	91.0 −0.5	45.14 −.70	34.0 +0.2	33.20 −.11	54.5 −0.6
10.2	35.72 .27	80.5 −0.6	22.67 .11	91.4 −0.3	44.44 .69	34.0 −0.3	33.09 .11	53.9 0.6
20.2	35.45 .26	79.6 1.1	22.56 .11	91.6 0.0	43.76 .67	33.4 0.9	32.98 .11	53.2 0.7
30.2	35.19 .24	78.2 1.6	22.45 .10	91.5 +0.2	43.11 .62	32.2 1.4	32.87 .10	52.6 0.6
Feb. 9.1	34.96 .21	76.5 1.9	22.35 .09	91.2 0.5	42.51 .55	30.5 1.9	32.77 .09	51.9 0.6
19.1	34.76 −.17	74.4 −2.2	22.27 −.07	90.5 +0.8	42.00 −.45	28.3 −2.3	32.68 −.08	51.4 −0.5
29.1	34.62 .11	72.1 2.4	22.22 .04	89.6 1.0	41.61 .33	25.8 2.6	32.62 .05	51.0 0.4
Mar. 10.1	34.54 −.05	69.6 2.5	22.19 −.01	88.5 1.3	41.34 .20	23.0 2.8	32.58 −.02	50.7 −0.2
20.0	34.52 +.02	67.1 2.4	22.20 +.03	87.0 1.5	41.22 −.05	20.1 2.9	32.57 +.01	50.6 0.0
30.0	34.57 .09	64.7 2.3	22.24 .06	85.4 1.8	41.25 +.11	17.2 2.9	32.60 .05	50.7 +0.2
Apr. 9.0	34.70 +.17	62.5 −2.1	22.33 +.11	83.5 +2.0	41.44 +.26	14.4 −2.7	32.67 +.09	51.0 +0.5
19.0	34.90 .24	60.5 1.8	22.46 .15	81.4 2.1	41.77 .41	11.8 2.4	32.78 .13	51.6 0.7
28.9	35.18 .31	58.9 1.4	22.62 .19	79.2 2.3	42.25 .54	9.5 2.1	32.94 .18	52.4 1.0
May 8.9	35.52 .37	57.7 1.0	22.84 .23	76.9 2.4	42.86 .66	7.6 1.6	33.14 .22	53.5 1.2
18.9	35.91 .42	57.0 −0.5	23.08 .26	74.5 2.4	43.58 .76	6.2 1.2	33.37 .25	54.9 1.5
28.8	36.35 +.46	56.7 0.0	23.36 +.29	72.0 +2.4	44.38 +.83	5.3 −0.6	33.64 +.28	56.4 +1.7
June 7.8	36.82 .48	57.0 +0.5	23.66 .31	69.6 2.3	45.24 .88	4.9 −0.1	33.93 .30	58.2 1.8
17.8	37.32 .49	57.7 1.0	23.98 .33	67.3 2.2	46.15 .91	5.1 +0.5	34.25 .32	60.1 1.9
27.8	37.81 .49	59.0 1.5	24.31 .33	65.2 2.0	47.07 .92	5.8 1.0	34.57 .32	62.0 2.0
July 7.7	38.31 .48	60.6 1.9	24.64 .33	63.3 1.8	47.98 .90	7.1 1.5	34.89 .32	64.1 2.0
17.7	38.78 +.46	62.7 +2.2	24.97 +.32	61.6 +1.5	48.86 +.86	8.9 +2.0	35.21 +.31	66.1 +2.0
27.7	39.23 .43	65.1 2.6	25.27 .30	60.2 1.2	49.69 .79	11.1 2.4	35.52 .30	68.0 1.9
Aug. 6.7	39.64 .39	67.8 2.8	25.56 .27	59.2 0.9	50.45 .72	13.7 2.8	35.81 .28	69.9 1.8
16.6	40.01 .34	70.8 3.0	25.82 .24	58.5 0.5	51.13 .63	16.7 3.1	36.07 .25	71.6 1.6
26.6	40.32 .29	73.9 3.2	26.04 .21	58.2 +0.2	51.71 .53	19.9 3.4	36.30 .22	73.1 1.4
Sept. 5.6	40.58 +.23	77.2 +3.3	26.23 +.17	58.2 −0.2	52.19 +.43	23.4 +3.6	36.49 +.18	74.4 +1.2
15.5	40.78 .17	80.5 3.3	26.38 .13	58.5 0.5	52.56 .31	27.0 3.7	36.66 .15	75.5 1.0
25.5	40.93 .12	83.7 3.2	26.49 .09	59.2 0.8	52.82 .20	30.7 3.7	36.79 .11	76.4 0.7
Oct. 5.5	41.02 .06	86.9 3.1	26.56 .05	60.1 1.0	52.96 +.08	34.5 3.7	36.88 .08	77.0 0.5
15.5	41.06 +.01	90.0 2.9	26.59 +.02	61.2 1.2	52.98 −.04	38.1 3.6	36.95 .05	77.4 0.3
25.4	41.04 −.04	92.8 +2.7	26.59 −.01	62.4 −1.3	52.88 −.16	41.6 +3.4	36.98 +.02	77.6 +0.1
Nov. 4.4	40.97 .09	95.4 2.4	26.56 .04	63.7 1.3	52.66 .27	44.9 3.1	36.98 .01	77.6 0.1
14.4	40.85 .14	97.6 2.0	26.51 .06	65.0 1.3	52.34 .37	47.8 2.8	36.96 .03	77.5 0.2
24.3	40.69 .18	99.5 1.6	26.43 .08	66.3 1.2	51.92 .47	50.4 2.3	36.92 .05	77.2 0.3
Dec. 4.3	40.50 .21	100.9 1.2	26.34 .10	67.4 1.1	51.41 .55	52.5 1.8	36.85 .07	76.8 0.4
14.3	40.27 −.24	101.8 +0.7	26.24 −.11	68.4 −0.9	50.82 −.61	54.0 +1.3	36.77 .08	76.3 −0.5
24.3	40.01 .26	102.3 +0.2	26.12 .12	69.2 0.7	50.18 .66	55.0 0.7	36.68 .10	75.8 0.6
34.2	39.75 .27	102.2 −0.1	26.01 −.12	69.8 0.5	49.50 .69	55.4 +0.1	36.58 .11	75.1 0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.		θ¹ Ceti.		38 Cassiopeiæ.		η Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m I 3	° ′ +35 4	h m I 18	° ′ − 8 42	h m I 23	° ′ +69 43	h m I 25	° ′ +14 48
	s	″	s	″	s	″	s	″
Jan. 0.3	54.81 −.14	24.1 −0.3	50.23 −.11	71.3 −0.7	29.31 −.48	69.0 +0.7	55.67 −.10	44.0 −0.6
10.2	54.67 .15	23.7 0.6	50.12 .11	71.9 0.6	28.82 .50	69.5 +0.2	55.56 .11	43.5 0.6
20.2	54.51 .15	22.9 0.9	50.00 .12	72.5 0.4	28.32 .51	69.4 −0.4	55.44 .12	42.8 0.7
30.2	54.36 .15	21.9 1.1	49.88 .11	72.8 −0.2	27.81 .50	68.7 0.9	55.32 .12	42.1 0.7
Feb. 9.2	54.21 .13	20.7 1.3	49.77 .11	72.9 0.0	27.32 .46	67.5 1.4	55.20 .11	41.4 0.7
19.1	54.09 −.11	19.3 −1.5	49.67 −.09	72.8 +0.2	26.88 −.41	65.8 −1.9	55.09 −.10	40.6 −0.7
29.1	53.98 .08	17.7 1.6	49.58 .07	72.5 0.4	26.50 .33	63.7 2.3	55.00 .08	39.9 0.7
Mar. 10.1	53.92 −.05	16.1 1.6	49.52 .05	71.9 0.7	26.21 .24	61.3 2.5	54.93 .05	39.3 0.6
20.1	53.89 .00	14.5 1.5	49.49 −.01	71.2 0.9	26.02 .13	58.7 2.7	54.90 −.02	38.8 0.4
30.0	53.92 +.05	13.0 1.4	49.50 +.02	70.2 1.1	25.95 −.02	55.9 2.7	54.90 +.02	38.4 −0.2
Apr. 9.0	53.99 +.10	11.7 −1.2	49.54 +.06	68.9 +1.4	25.99 +.11	53.2 −2.7	54.94 +.07	38.3 0.0
19.0	54.11 .15	10.6 0.9	49.63 .11	67.4 1.6	26.16 .22	50.5 2.5	55.03 .11	38.4 +0.2
28.9	54.29 .20	9.9 0.6	49.76 .15	65.7 1.8	26.44 .34	48.2 2.2	55.17 .16	38.7 0.5
May 8.9	54.52 .25	9.5 −0.2	49.93 .20	63.8 2.0	26.84 .45	46.1 1.9	55.35 .20	39.3 0.7
18.9	54.79 .29	9.4 +0.1	50.14 .23	61.7 2.1	27.34 .54	44.4 1.5	55.57 .24	40.2 1.0
28.9	55.10 +.33	9.8 +0.5	50.39 +.26	59.6 +2.2	27.93 +.62	43.1 −1.0	55.82 +.27	41.3 +1.5
June 7.8	55.44 .35	10.5 0.9	50.66 .29	57.4 2.2	28.58 .68	42.4 −0.5	56.11 .30	42.7 1.5
17.8	55.81 .37	11.6 1.2	50.96 .31	55.2 2.2	29.29 .72	42.1 0.0	56.42 .32	44.3 1.7
27.8	56.18 .37	13.0 1.6	51.27 .32	53.0 2.1	30.03 .75	42.3 +0.5	56.74 .33	46.0 1.8
July 7.8	56.56 .37	14.7 1.8	51.59 .32	50.9 2.0	30.78 .75	43.1 1.0	57.08 .33	47.9 1.9
17.7	56.93 +.36	16.7 +2.1	51.91 +.31	49.0 +1.8	31.53 +.74	44.3 +1.5	57.40 +.32	49.8 +1.9
27.7	57.28 .34	18.8 2.2	52.22 .30	47.3 1.6	32.26 .71	46.0 1.9	57.72 .31	51.7 1.9
Aug. 6.7	57.61 .32	21.1 2.4	52.52 .28	45.9 1.3	32.95 .67	48.2 2.3	58.03 .29	53.7 1.9
16.6	57.92 .29	23.6 2.4	52.79 .26	44.7 1.0	33.59 .61	50.7 2.6	58.31 .27	55.5 1.8
26.6	58.19 .25	26.0 2.4	53.04 .23	43.9 0.7	34.17 .55	53.5 2.9	58.57 .24	57.3 1.7
Sept. 5.6	58.42 +.21	28.5 +2.4	53.25 +.20	43.4 +0.4	34.68 +.47	56.5 +3.2	58.80 +.21	58.8 +1.5
15.6	58.62 .18	30.9 2.4	53.43 .16	43.2 +0.1	35.12 .39	59.8 3.4	58.99 .18	60.3 1.3
25.5	58.78 .14	33.2 2.3	53.58 .13	43.2 −0.1	35.47 .31	63.3 3.5	59.15 .14	61.5 1.1
Oct. 5.5	58.89 .10	35.4 2.1	53.69 .09	43.6 0.4	35.73 .22	66.7 3.5	59.28 .11	62.5 0.9
15.5	58.97 .06	37.5 1.9	53.77 .06	44.2 0.7	35.91 .13	70.2 3.4	59.37 .08	63.3 0.7
25.5	59.02 +.03	39.3 +1.7	53.81 +.03	45.0 −0.9	35.99 +.04	73.6 +3.3	59.44 +.05	64.0 +0.5
Nov. 4.4	59.02 −.01	40.9 1.5	53.83 .00	45.9 1.0	35.98 −.05	76.9 3.1	59.47 +.02	64.4 0.3
14.4	59.00 .04	42.3 1.2	53.82 −.02	46.9 1.0	35.88 .14	79.9 2.9	59.48 −.01	64.7 +0.2
24.4	58.95 .07	43.3 0.9	53.79 .05	48.0 1.1	35.69 .23	82.6 2.5	59.46 .03	64.8 0.1
Dec. 4.3	58.87 .09	44.1 0.6	53.73 .07	49.0 1.0	35.43 .31	85.0 2.1	59.41 .06	64.7 −0.
14.3	58.76 −.11	44.6 +0.3	53.65 −.08	50.0 −0.9	35.08 −.38	86.9 +1.6	59.35 −.08	64.5 −0.3
24.3	58.64 .13	44.7 0.0	53.56 .10	50.9 0.8	34.67 .43	88.3 1.1	59.26 .09	64.1 0.4
34.3	58.49 −.14	44.5 −0.4	53.45 −.11	51.7 −0.7	34.21 −.48	89.1 +0.5	59.16 −.10	63.6 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Eridani. (*Achernar.*)		*o* Piscium.		*β* Arietis.		50 Cassiopeiæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 1 33	° ′ −57 45	h m 1 39	° ′ + 8 38	h m 1 48	° ′ +20 18	h m 1 54	° ′ +71 55
	s	″	s	″	s	″	s	″
Jan. 0.3	51.79 −.32	66.4 −0.6	54.82 −.10	10.0 −0.6	54.36 −.10	10.0 −0.5	33.70 −.50	28.8 +1.3
10.3	51.47 .33	66.8 −0.1	54.72 .11	9.4 0.6	54.25 .11	9.6 0.5	33.18 .54	29.8 0.7
20.2	51.14 .33	66.6 +0.5	54.60 .12	8.8 0.6	54.12 .13	9.0 0.6	32.62 .57	30.2 +0.1
30.2	50.82 .32	65.8 1.0	54.48 .12	8.2 0.6	53.99 .13	8.4 0.7	32.04 .58	29.9 −0.5
Feb. 9.2	50.51 .30	64.5 1.5	54.36 .12	7.6 0.6	53.86 .13	7.6 0.8	31.46 .56	29.1 1.1
19.2	50.22 −.27	62.7 +2.0	54.25 −.11	7.1 −0.5	53.74 −.12	6.8 −0.8	30.92 −.51	27.8 −1.6
29.1	49.97 .23	60.4 2.5	54.15 .09	6.7 0.4	53.62 .10	6.0 0.9	30.43 .44	26.0 2.0
Mar. 10.1	49.76 .18	57.8 2.8	54.08 .06	6.3 0.3	53.53 .07	5.1 0.8	30.03 .35	23.8 2.3
20.1	49.61 .13	54.8 3.1	54.03 −.03	6.2 −0.1	53.48 −.04	4.4 0.7	29.73 .24	21.3 2.6
30.0	49.51 −.06	51.5 3.4	54.02 +.01	6.2 +0.1	53.46 .00	3.7 0.6	29.55 −.11	18.6 2.7
Apr. 9.0	49.48 .00	48.1 +3.5	54.05 +.05	6.4 +0.3	53.48 +.05	3.2 −0.4	29.50 +.02	15.9 2.7
19.0	49.51 +.07	44.5 3.6	54.12 .09	6.8 0.6	53.55 .09	2.9 −0.2	29.59 .16	13.2 2.6
29.0	49.62 .14	40.8 3.6	54.24 .14	7.5 0.8	53.66 .14	2.9 +0.1	29.81 .29	10.6 2.5
May 8.9	49.80 .21	37.2 3.6	54.40 .18	8.4 1.0	53.82 .19	3.1 0.4	30.17 .41	8.3 2.2
18.9	50.04 .28	33.7 3.4	54.60 .22	9.6 1.3	54.03 .23	3.6 0.7	30.64 .53	6.2 1.8
28.9	50.35 +.33	30.4 +3.2	54.84 +.26	10.9 +1.5	54.28 +.27	4.4 +0.9	31.23 +.63	4.6 −1.4
June 7.9	50.71 .39	27.3 2.9	55.12 .29	12.5 1.6	54.56 .29	5.4 1.1	31.90 .71	3.4 1.0
17.8	51.12 .43	24.6 2.5	55.41 .30	14.2 1.8	54.87 .32	6.6 1.4	32.65 .77	2.7 −0.5
27.8	51.56 .46	22.3 2.1	55.72 .31	16.0 1.8	55.20 .33	8.1 1.6	33.44 .81	2.5 0.0
July 7.8	52.03 .48	20.4 1.6	56.05 .32	17.9 1.9	55.53 .34	9.8 1.7	34.27 .83	2.7 +0.5
17.7	52.51 +.48	19.0 +1.1	56.37 +.32	19.8 +1.9	55.87 +.34	11.5 +1.8	35.11 +.83	3.5 +1.0
27.7	52.99 .47	18.2 +0.5	56.69 .31	21.7 1.8	56.21 .33	13.4 1.9	35.94 .82	4.8 1.5
Aug. 6.7	53.46 .45	18.0 0.0	56.99 .29	23.5 1.7	56.53 .31	15.2 1.9	36.75 .79	6.4 1.9
16.7	53.89 .42	18.3 −0.6	57.28 .27	25.1 1.6	56.83 .29	17.1 1.8	37.51 .74	8.5 2.3
26.6	54.29 .37	19.2 1.2	57.54 .25	26.6 1.4	57.11 .27	18.9 1.8	38.22 .68	11.0 2.6
Sept. 5.6	54.63 +.32	20.6 −1.7	57.77 +.22	27.9 +1.2	57.36 +.24	20.6 +1.7	38.87 +.61	13.8 +2.9
15.6	54.92 .26	22.5 2.1	57.97 .19	29.0 1.0	57.58 .20	22.2 1.5	39.44 .53	16.8 3.1
25.6	55.15 .19	24.8 2.4	58.14 .15	29.9 0.8	57.77 .17	23.6 1.3	39.92 .44	20.1 3.3
Oct. 5.5	55.30 .12	27.4 2.7	58.28 .12	30.6 0.5	57.92 .14	24.9 1.2	40.32 .35	23.4 3.4
15.5	55.39 +.05	30.2 2.9	58.39 .09	31.0 0.3	58.04 .11	26.0 1.0	40.61 .25	26.8 3.4
25.5	55.40 .02	33.1 −2.9	58.46 +.06	31.2 +0.1	58.14 +.08	27.0 +0.8	40.81 +.14	30.3 +3.4
Nov. 4.5	55.35 .08	36.0 2.8	58.51 .03	31.3 0.0	58.20 .05	27.7 0.7	40.90 +.04	33.6 3.3
14.4	55.23 .14	38.8 2.6	58.53 +.01	31.2 −0.2	58.23 +.02	28.3 0.5	40.88 −.07	36.8 3.1
24.4	55.06 .20	41.3 2.3	58.52 −.02	30.9 0.3	58.23 −.01	28.7 0.3	40.76 .18	39.8 2.8
Dec. 4.4	54.83 .24	43.5 2.0	58.49 .04	30.5 0.4	58.20 .04	28.9 +0.1	40.53 .27	42.4 2.5
14.3	54.57 −.28	45.2 −1.5	58.43 −.07	30.1 −0.5	58.15 −.06	28.9 −0.1	40.21 −.36	44.7 +2.0
24.3	54.27 .31	46.5 1.0	58.36 .09	29.6 0.6	58.07 .09	28.8 0.3	39.80 .45	46.5 1.5
34.3	53.95 −.32	47.2 −0.5	58.26 −.10	29.0 −0.6	57.97 −.11	28.5 −0.4	39.32 .51	47.8 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*a* Arietis.		*ξ*¹ Ceti.		*ι* Cassiopeiæ.		*ξ*² Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 2 1	° ′ +22 58	h m 2 7	° ′ +8 21	h m 2 20	° ′ +66 56	h m 2 22	° ′ +7 59
	s	″	s	″	s	″	s	″
Jan. 0.3	19.39 −.10	26.6 −0.1	30.15 −.09	39.3 −0.5	30.55 −.33	27.9 +1.3	38.74 −.08	45.5 −0.6
10.3	19.29 .12	26.3 0.3	30.05 .10	38.7 0.5	30.19 .38	29.0 0.8	38.65 .10	45.0 0.6
20.3	19.16 .13	25.8 0.5	29.94 .12	38.2 0.5	29.78 .42	29.6 +0.3	38.54 .12	44.4 0.6
30.2	19.03 .14	25.2 0.6	29.82 .13	37.6 0.5	29.35 .44	29.6 −0.3	38.42 .13	43.8 0.5
Feb. 9.2	18.89 .14	24.5 0.8	29.69 .13	37.1 0.5	28.90 .44	29.1 0.8	38.29 .13	43.3 0.5
19.2	18.75 −.13	23.7 −0.8	29.56 −.12	36.6 −0.4	28.46 −.42	28.1 −1.3	38.16 −.13	42.9 −0.4
29.2	18.63 .11	22.8 0.9	29.44 .11	36.2 0.3	28.06 .37	26.5 1.7	38.04 .12	42.5 0.3
Mar. 10.1	18.53 .09	21.9 0.9	29.35 .08	35.9 0.2	27.72 .31	24.6 2.0	37.93 .10	42.2 0.2
20.1	18.45 .06	21.0 0.8	29.27 .05	35.8 −0.1	27.44 .23	22.4 2.3	37.84 .07	42.1 −0.1
30.1	18.42 −.02	20.2 0.7	29.24 −.02	35.8 +0.1	27.26 .13	20.0 2.5	37.79 −.03	42.1 +0.1
Apr. 9.0	18.43 +.03	19.6 −0.5	29.24 +.02	36.0 +0.3	27.18 −.03	17.4 −2.6	37.78 +.01	42.3 +0.3
19.0	18.49 .08	19.1 0.3	29.29 .07	36.4 0.5	27.20 +.08	14.9 2.5	37.81 .05	42.7 0.5
29.0	18.59 .13	18.9 −0.1	29.38 .11	37.0 0.8	27.34 .19	12.4 2.4	37.89 .10	43.3 0.7
May 9.0	18.75 .18	18.9 +0.2	29.51 .16	37.9 1.0	27.58 .29	10.1 2.1	38.01 .14	44.2 0.9
18.9	18.95 .22	19.2 0.4	29.69 .20	39.0 1.2	27.92 .39	8.1 1.8	38.17 .19	45.3 1.1
28.9	19.19 +.26	19.8 +0.7	29.91 +.24	40.3 +1.4	28.36 +.48	6.4 −1.5	38.38 +.23	46.5 +1.3
June 7.9	19.47 .29	20.6 1.0	30.17 .27	41.7 1.6	28.88 .55	5.1 1.1	38.62 .26	48.0 1.5
17.8	19.78 .32	21.7 1.2	30.45 .29	43.4 1.7	29.46 .61	4.3 0.6	38.90 .28	49.6 1.6
27.8	20.10 .33	23.0 1.4	30.75 .31	45.1 1.8	30.10 .65	3.9 −0.2	39.19 .30	51.3 1.7
July 7.8	20.44 .34	24.5 1.6	31.07 .32	46.9 1.8	30.76 .68	4.0 +0.3	39.50 .32	53.0 1.8
17.8	20.79 +.34	26.1 +1.7	31.39 +.32	48.7 +1.8	31.45 +.69	4.5 +0.7	39.82 +.32	54.8 +1.7
27.7	21.13 .34	27.9 1.8	31.71 .31	50.5 1.7	32.14 .68	5.5 1.2	40.14 .32	56.5 1.7
Aug. 6.7	21.46 .32	29.7 1.9	32.02 .30	52.2 1.6	32.82 .67	6.8 1.6	40.45 .31	58.2 1.6
16.7	21.77 .30	31.6 1.9	32.31 .28	53.8 1.5	33.48 .64	8.6 2.0	40.76 .29	59.7 1.4
26.7	22.06 .28	33.4 1.8	32.59 .26	55.2 1.3	34.10 .60	10.8 2.3	41.04 .27	61.1 1.[illegible]
Sept. 5.6	22.32 +.25	35.1 +1.7	32.84 +.24	56.4 +1.1	34.67 +.55	13.2 +2.6	41.30 +.25	62.2 +1.1
15.6	22.56 .22	36.8 1.6	33.06 .21	57.4 0.9	35.19 .49	15.9 2.8	41.53 .22	63.2 0.8
25.6	22.76 .19	38.3 1.5	33.26 .18	58.2 0.7	35.65 .42	18.8 3.0	41.74 .19	63.9 0.6
Oct. 5.5	22.93 .16	39.7 1.3	33.42 .15	58.8 0.5	36.04 .35	21.9 3.1	41.92 .16	64.4 0.4
15.5	23.07 .13	40.9 1.2	33.55 .12	59.2 0.3	36.36 .28	25.1 3.2	42.07 .14	64.7 0.2
25.5	23.18 +.10	42.0 +1.0	33.66 +.09	59.3 +0.1	36.60 +.20	28.3 +3.2	42.19 +.11	64.8 +0.1
Nov. 4.5	23.26 .06	42.9 0.9	33.73 .06	59.3 −0.1	36.76 .12	31.4 3.1	42.28 .07	64.8 −0.1
14.4	23.30 +.03	43.6 0.7	33.78 +.03	59.1 0.2	36.83 +.03	34.4 2.9	42.34 .04	64.6 0.3
24.4	23.31 .00	44.1 0.5	33.80 .00	58.8 0.3	36.82 −.05	37.3 2.7	42.37 +.02	64.2 0.4
Dec. 4.4	23.30 −.03	44.5 0.3	33.79 −.02	58.4 0.4	36.73 .14	39.9 2.4	42.37 −.01	63.8 0.5
14.4	23.26 −.06	44.6 +0.1	33.75 −.05	58.0 −0.5	36.55 −.22	42.1 +2.1	42.35 −.04	63.3 −0.5
24.3	23.18 .08	44.6 −0.1	33.69 .07	57.4 0.5	36.29 .29	44.0 1.6	42.29 .07	62.7 0.6
34.3	23.09 −.10	44.4 −0.3	33.60 −.09	56.9 −0.5	35.97 −.35	45.4 +1.2	42.21 −.09	62.1 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		γ Ceti.		α Ceti.		48 Cephei (H.)		ζ Arietis.	
		Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
		h m 2 37	° ′ +2 47	h m 2 56	° ′ +3 40	h m 3 7	° ′ +77 21	h m 3 8	° ′ +20 39
		s	″	s	″	s	″	s	″
Jan	0.3	55.76 -.08	57.2 -0.8	51.73 -.07	60.8 -0.8	10.45 -.54	31.4 +2.1	56.61 .06	43.9 -0.1
	10.3	55.67 .10	56.5 0.7	51.65 .09	60.1 0.7	9.84 .67	33.3 1.6	56.53 .09	43.8 0.2
	20.3	55.56 .12	55.9 0.6	51.55 .11	59.5 0.6	9.11 .77	34.7 1.1	56.43 .12	43.6 0.3
	30.3	55.44 .13	55.3 0.5	51.42 .13	58.9 0.5	8.30 .84	35.5 +0.5	56.30 .14	43.2 0.4
Feb.	9.2	55.30 .14	54.8 0.4	51.29 .14	58.5 0.4	7.44 .87	35.7 -0.1	56.15 .15	42.8 0.5
	19.2	55.16 -.13	54.5 -0.3	51.14 -.14	58.1 -0.3	6.57 -.86	35.4 -0.6	56.00 -.15	42.3 -0.5
	29.2	55.03 .12	54.3 -0.1	51.00 .13	57.8 -0.2	5.73 .81	34.4 1.2	55.85 .15	41.7 0.6
Mar	10.2	54.92 .10	54.2 0.0	50.88 .12	57.7 0.0	4.95 .72	33.0 1.7	55.71 .13	41.1 0.6
	20.1	54.82 .08	54.3 +0.2	50.77 .09	57.8 +0.1	4.28 .60	31.1 2.1	55.59 .11	40.5 0.6
	30.1	54.76 .05	54.6 0.4	50.69 .06	58.0 0.3	3.75 .45	28.8 2.4	55.49 .07	40.0 0.5
Apr.	9.1	54.73 -.01	55.1 +0.6	50.64 -.02	58.4 +0.5	3.37 -.28	26.2 -2.6	55.44 .03	39.5 -0.4
	19.0	54.74 +.04	55.8 0.8	50.64 +.02	59.0 0.7	3.18 -.10	23.5 2.8	55.43 +.01	39.1 0.3
	29.0	54.80 .08	56.6 1.0	50.68 .06	59.8 0.9	3.17 +.09	20.6 2.8	55.46 .06	38.9 0.1
May	9.0	54.90 .12	57.7 1.2	50.77 .11	60.9 1.1	3.36 .28	17.9 2.7	55.55 .11	38.9 +0.1
	19.0	55.05 .17	59.1 1.4	50.90 .15	62.1 1.3	3.73 .46	15.3 2.5	55.68 .16	39.1 0.3
	28.9	55.24 +.21	60.5 +1.6	51.07 +.19	63.5 +1.5	4.28 +.63	12.9 -2.2	55.86 +.20	39.5 +0.5
June	7.9	55.46 .24	62.2 1.7	51.28 .23	65.0 1.6	4.99 .78	10.8 1.9	56.08 .24	40.1 0.7
	17.9	55.72 .27	64.0 1.8	51.53 .26	66.6 1.7	5.84 .91	9.0 1.5	56.34 .27	40.9 0.9
	27.9	56.01 .29	65.8 1.8	51.80 .28	68.4 1.8	6.81 1.01	7.7 1.1	56.63 .30	41.8 1.1
July	7.8	56.31 .31	67.6 1.8	52.10 .30	70.1 1.8	7.87 1.09	6.9 0.6	56.94 .32	43.0 1.2
	17.8	56.62 +.31	69.4 +1.8	52.41 +.31	71.9 +1.7	9.00 +1.15	6.5 -0.2	57.27 +.33	44.2 +1.3
	27.8	56.94 .31	71.1 1.7	52.72 .31	73.5 1.6	10.16 1.18	6.5 +0.3	57.60 .33	45.6 1.4
Aug	6.7	57.25 .30	72.7 1.5	53.03 .31	75.1 1.5	11.35 1.18	7.1 0.8	57.93 .33	47.0 1.4
	16.7	57.55 .29	74.1 1.3	53.34 .30	76.5 1.3	12.53 1.17	8.1 1.2	58.26 .32	48.4 1.4
	26.7	57.83 .28	75.3 1.1	53.63 .28	77.7 1.1	13.69 1.13	9.5 1.6	58.58 .31	49.8 1.3
Sept.	5.7	58.10 +.25	76.3 +0.8	53.91 +.27	78.7 +0.8	14.79 +1.07	11.3 +2.0	58.88 +.29	51.0 +1.2
	15.6	58.34 .23	77.0 0.6	54.16 .24	79.3 0.6	15.83 1.00	13.5 2.4	59.16 .27	52.2 1.1
	25.6	58.56 .20	77.5 0.3	54.39 .22	79.8 0.3	16.78 .90	16.1 2.7	59.42 .25	53.3 1.0
Oct.	5.6	58.75 .18	77.7 +0.1	54.60 .19	80.0 +0.1	17.63 .79	18.9 2.9	59.65 .22	54.3 0.9
	15.6	58.91 .15	77.6 -0.1	54.78 .16	80.0 -0.1	18.36 .67	22.0 3.1	59.86 .19	55.2 0.8
	25.5	59.04 +.12	77.4 -0.3	54.93 +.14	79.8 -0.3	18.96 +.53	25.2 +3.3	60.04 +.16	55.9 +0.6
Nov	4.5	59.14 .09	76.9 0.5	55.05 .11	79.3 0.5	19.42 .35	28.5 3.3	60.19 .11	56.4 0.5
	14.5	59.21 .06	76.4 0.6	55.14 .08	78.8 0.6	19.72 .21	31.8 3.3	60.30 .10	56.9 0.4
	24.4	59.26 +.03	75.7 0.7	55.20 .04	78.1 0.7	19.85 +.05	35.1 3.2	60.39 .07	57.2 0.3
Dec.	4.4	59.27 .00	74.9 0.8	55.23 +.01	77.3 0.8	19.81 -.12	38.3 3.0	60.44 +.05	57.4 0.2
	14.4	59.25 -.03	74.2 -0.8	55.23 -.02	76.6 0.8	19.60 -.29	41.2 +2.7	60.45 .00	57.5 +0.1
	24.4	59.20 .06	73.4 0.8	55.20 .05	75.8 0.8	19.23 .45	43.8 2.4	60.43 .04	57.6 0.0
	34.3	59.13 .09	72.6 -0.7	55.13 -.08	75.0 0.7	18.71 .59	45.9 +2.1	60.37 .07	57.5 0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Persei.		*ε* Eridani.		*δ* Persei.		*η* Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 16	° ′ +49 29	h m 3 28	° ′ −9 48	h m 3 35	° ′ +47 27	h m 3 41	° ′ +23 47
	s	″	s	″	s	″	s	″
Jan. 0.4	55.36 −.11	45.6 +1.2	3.21 −.06	32.7 −1.3	32.84 −.08	34.7 +1.2	19.50 −.04	12.4 +0.1
10.3	55.23 .15	46.6 0.8	3.13 .09	33.9 1.1	32.74 .12	35.8 0.9	19.45 .07	12.4 0.0
20.3	55.06 .19	47.3 0.5	3.03 .12	34.9 0.9	32.59 .17	36.5 0.6	19.36 .11	12.4 −0.1
30.3	54.85 .22	47.6 +0.1	2.90 .14	35.6 0.6	32.40 .20	36.9 +0.2	19.23 .13	12.2 0.2
Feb. 9.3	54.62 .24	47.5 −0.3	2.75 .15	36.2 0.4	32.18 .23	37.0 −0.1	19.09 .15	11.9 0.3
19.2	54.37 −.25	47.0 −0.7	2.60 −.16	36.4 −0.2	31.95 −.24	36.7 −0.5	18.93 −.16	11.6 −0.4
29.2	54.13 .24	46.2 1.0	2.44 .16	36.5 +0.1	31.71 .23	36.1 0.8	18.76 .16	11.1 0.4
Mar. 10.2	53.90 .21	45.1 1.3	2.28 .15	36.2 0.4	31.48 .21	35.1 1.1	18.60 .15	10.7 0.6
20.1	53.70 .18	43.7 1.5	2.15 .13	35.7 0.7	31.28 .18	33.9 1.3	18.46 .13	10.0 0.6
30.1	53.55 .13	42.1 1.7	2.03 .10	35.0 0.9	31.11 .14	32.5 1.5	18.34 .10	9.4 0.6
Apr. 9.1	53.45 −.07	40.3 −1.8	1.95 −.06	34.0 +1.1	31.00 −.09	30.9 −1.6	18.26 −.06	8.8 −0.5
19.1	53.41 .00	38.5 1.8	1.91 −.02	32.7 1.4	30.94 −.03	29.3 1.6	18.22 −.02	8.3 0.4
29.0	53.43 +.06	36.8 1.7	1.91 +.02	31.2 1.6	30.94 +.04	27.7 1.6	18.22 +.03	7.9 0.3
May 9.0	53.53 .13	35.1 1.6	1.95 .07	29.5 1.8	31.01 .10	26.1 1.5	18.28 .08	7.6 −0.2
19.0	53.70 .20	33.7 1.4	2.04 .11	27.7 1.9	31.15 .17	24.7 1.3	18.38 .13	7.5 0.0
29.0	53.93 +.26	32.4 −1.1	2.18 +.15	25.7 +2.1	31.35 +.23	23.4 −1.1	18.53 +.18	7.6 +0.2
June 7.9	54.21 .31	31.4 0.8	2.35 .19	23.5 2.2	31.61 .28	22.4 0.9	18.73 .22	7.9 0.4
17.9	54.55 .36	30.7 0.5	2.57 .23	21.3 2.2	31.92 .33	21.7 0.6	18.97 .26	8.4 0.6
27.9	54.94 .40	30.3 −0.2	2.81 .26	19.2 2.1	32.27 .37	21.2 −0.3	19.24 .29	9.0 0.7
July 7.8	55.35 .43	30.3 +0.1	3.08 .28	17.1 2.1	32.66 .40	21.1 0.0	19.54 .31	9.8 0.9
17.8	55.79 +.44	30.6 +0.5	3.37 +.29	15.1 +1.9	33.08 +.42	21.2 +0.3	19.86 +.33	10.8 +1.0
27.8	56.24 .45	31.2 0.8	3.67 .30	13.3 1.7	33.51 .44	21.7 0.6	20.20 .34	11.8 1.1
Aug. 6.8	56.70 .45	32.1 1.0	3.97 .30	11.7 1.4	33.95 .44	22.4 0.8	20.53 .34	12.9 1.1
16.7	57.15 .44	33.3 1.3	4.27 .30	10.4 1.1	34.39 .43	23.3 1.1	20.87 .33	14.1 1.2
26.7	57.59 .43	34.7 1.5	4.57 .29	9.4 0.8	34.82 .42	24.5 1.3	21.20 .32	15.2 1.1
Sept. 5.7	58.01 +.41	36.3 +1.7	4.85 +.28	8.8 +0.5	35.24 +.41	25.9 +1.5	21.52 +.31	16.4 +1.1
15.7	58.40 .38	38.2 1.9	5.12 .26	8.5 +0.1	35.63 .39	27.5 1.6	21.83 .30	17.5 1.0
25.6	58.77 .35	40.1 2.0	5.37 .24	8.6 −0.3	36.00 .36	29.2 1.8	22.11 .28	18.5 1.0
Oct. 5.6	59.10 .32	42.2 2.1	5.59 .21	9.0 0.6	36.35 .33	31.0 1.9	22.38 .25	19.4 0.9
15.6	59.40 .28	44.3 2.2	5.79 .19	9.8 0.9	36.66 .29	32.9 1.9	22.62 .23	20.2 0.8
25.5	59.66 +.24	46.5 +2.2	5.96 +.16	10.9 −1.2	36.93 +.25	34.8 +2.0	22.84 +.20	20.9 +0.7
Nov. 4.5	59.87 .19	48.6 2.1	6.11 .13	12.1 1.3	37.17 .21	36.8 1.9	23.03 .17	21.5 0.6
14.5	60.03 .14	50.8 2.1	6.22 .10	13.6 1.5	37.36 .17	38.7 1.9	23.18 .14	22.1 0.5
24.5	60.15 .09	52.8 2.0	6.30 .06	15.1 1.6	37.50 .11	40.6 1.8	23.30 .10	22.5 0.4
Dec. 4.4	60.21 +.03	54.7 1.8	6.34 +.03	16.7 1.6	37.59 .06	42.4 1.7	23.39 .06	22.9 0.3
14.4	60.22 −.02	56.4 +1.6	6.35 −.01	18.2 −1.5	37.62 +.01	44.0 +1.5	23.43 +.03	23.2 +0.2
24.4	60.17 .07	57.9 1.3	6.33 .04	19.6 1.4	37.61 −.04	45.5 1.3	23.44 −.01	23.4 +0.1
34.4	60.07 −.11	59.1 +1.1	6.27 −.07	20.9 −1.2	37.53 −.10	46.7 +1.1	23.41 −.05	23.4 0.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 47	° ′ +31 34	h m 3 53	° ′ −13 47	h m 4 13	° ′ +15 22	h m 4 22	° ′ +18 57
	s	″	s	″	s	″	s	″
Jan. 0.4	37.16 −.05	42.0 +0.5	12.19 −.05	72.7 −1.5	54.03 −.01	44.8 −0.3	34.20 .00	8.9 −0.1
10.4	37.10 .08	42.5 0.3	12.12 .08	74.1 1.3	54.00 .05	44.5 0.3	34.18 −.04	8.8 0.1
20.3	37.01 .11	42.7 +0.2	12.03 .11	75.4 1.1	53.94 .08	44.2 0.3	34.11 .08	8.7 0.2
30.3	36.88 .14	42.8 0.0	11.90 .14	76.3 0.8	53.83 .12	43.9 0.3	34.02 .11	8.5 0.2
Feb 9.3	36.72 .17	42.7 −0.2	11.75 .15	77.0 0.5	53.71 .14	43.6 0.3	33.89 .14	8.3 0.2
19.3	36.54 −.18	42.4 −0.4	11.59 −.17	77.3 −0.2	53.55 −.15	43.3 −0.3	33.74 −.16	8.0 −0.3
29.2	36.36 .18	41.9 0.6	11.42 .17	77.4 +0.1	53.40 .16	43.0 0.3	33.57 .17	7.7 0.3
Mar. 10.2	36.19 .17	41.3 0.7	11.25 .16	77.2 0.4	53.23 .15	42.7 0.3	33.41 .16	7.4 0.3
20.2	36.03 .15	40.5 0.8	11.10 .14	76.7 0.7	53.08 .14	42.4 0.3	33.25 .15	7.1 0.3
30.1	35.89 .11	39.6 0.9	10.97 .12	75.9 0.9	52.95 .12	42.2 0.2	33.11 .12	6.8 0.3
Apr. 9.1	35.80 −.07	38.8 −0.9	10.86 −.09	74.8 +1.2	52.85 −.09	42.1 −0.1	33.00 −.09	6.5 −0.3
19.1	35.75 −.03	37.9 0.8	10.80 −.05	73.5 1.5	52.78 −.05	42.0 0.0	32.93 .05	6.2 0.2
29.1	35.74 +.02	37.1 0.8	10.77 .00	71.9 1.7	52.75 .00	42.0 +0.1	32.89 .01	6.1 0.1
May 9.0	35.80 .08	36.3 0.6	10.79 +.04	70.1 1.9	52.78 +.04	42.2 0.2	32.91 +.04	6.0 +0.1
19.0	35.90 .13	35.8 0.5	10.85 .09	68.1 2.1	52.84 .09	42.5 0.4	32.97 .08	6.2 0.2
29.0	36.06 +.18	35.4 −0.3	10.96 +.13	65.9 +2.2	52.96 +.13	43.0 +0.5	33.08 +.13	6.4 +0.3
June 8.0	36.26 .23	35.2 −0.1	11.11 .17	63.7 2.3	53.11 .18	43.6 0.7	33.23 .17	6.8 0.4
17.9	36.51 .27	35.2 +0.1	11.30 .21	61.4 2.3	53.31 .22	44.4 0.8	33.43 .21	7.3 0.6
27.9	36.80 .30	35.4 0.3	11.53 .24	59.1 2.3	53.55 .25	45.3 0.9	33.66 .25	8.0 0.7
July 7.9	37.11 .33	35.8 0.5	11.79 .27	56.9 2.2	53.81 .27	46.3 1.0	33.92 .28	8.7 0.8
17.8	37.45 +.34	36.4 +0.7	12.06 +.29	54.8 +2.0	54.10 +.29	47.3 +1.1	34.21 +.30	9.6 +0.9
27.8	37.80 .35	37.2 0.8	12.36 .30	52.9 1.8	54.40 .31	48.4 1.1	34.52 .31	10.5 0.9
Aug. 6.8	38.16 .36	38.1 1.0	12.66 .30	51.2 1.5	54.72 .32	49.5 1.1	34.83 .32	11.5 0.9
16.8	38.52 .36	39.1 1.1	12.96 .30	49.9 1.1	55.03 .32	50.5 1.0	35.16 .32	12.4 0.9
26.7	38.88 .35	40.2 1.1	13.27 .30	49.0 0.8	55.35 .32	51.5 0.9	35.48 .32	13.3 0.8
Sept. 5.7	39.22 +.34	41.4 +1.2	13.56 +.29	48.4 +0.4	55.67 +.31	52.3 +0.8	35.80 +.32	14.1 +0.8
15.7	39.55 .32	42.6 1.2	13.84 .27	48.2 0.0	55.97 .30	53.1 0.7	36.11 .31	14.8 0.7
25.7	39.86 .30	43.7 1.2	14.11 .25	48.4 −0.4	56.26 .28	53.7 0.5	36.41 .29	15.4 0.6
Oct. 5.6	40.15 .28	44.9 1.2	14.35 .23	49.0 0.8	56.53 .26	54.1 0.3	36.69 .28	15.9 0.4
15.6	40.42 .25	46.1 1.1	14.57 .21	50.0 1.1	56.79 .24	54.3 0.2	36.96 .26	16.3 0.3
25.6	40.65 +.22	47.2 +1.1	14.77 +.18	51.2 −1.4	57.02 +.22	54.5 +0.1	37.21 +.23	16.5 +0.2
Nov. 4.5	40.86 .19	48.2 1.0	14.93 .15	52.8 1.6	57.23 .19	54.4 0.1	37.43 .21	16.7 +0.1
14.5	41.03 .16	49.2 0.9	15.07 .12	54.5 1.8	57.41 .16	54.3 0.2	37.62 .18	16.7 0.0
24.5	41.17 .12	50.1 0.9	15.17 .08	56.3 1.8	57.55 .13	54.1 0.2	37.78 .14	16.7 0.0
Dec. 4.5	41.26 .08	50.9 0.8	15.23 .05	58.2 1.9	57.66 .09	53.9 0.3	37.91 .10	16.7 0.1
14.4	41.32 +.03	51.7 +0.7	15.27 +.01	60.0 1.8	57.74 +.06	53.6 −0.3	37.99 +.07	16.6 0.1
24.4	41.33 .01	52.3 0.6	15.26 .02	61.8 1.7	57.78 +.02	53.3 0.3	38.04 +.02	16.5 0.1
34.4	41.30 .05	52.8 +0.5	15.22 −.06	63.3 1.5	57.77 .02	53.0 0.3	38.04 .02	16.4 0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Tauri. (*Aldebaran.*)		α Camelopardalis.		ι Aurigæ.		11 Orionis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 4 29	° ′ +16 18	h m 4 43	° ′ +66 9	h m 4 50	° ′ +33 0	h m 4 58	° ′ +15 15
	s	″	s	″	s	″	s	″
Jan. 0.4	58.77 +.01	10.1 −0.3	45.80 −.05	72.8 +2.4	15.12 +.02	16.4 +0.7	39.26 +.03	41.6 −0.3
10.4	58.76 −.03	9.8 0.3	45.70 .15	75.0 2.1	15.12 −.03	17.1 0.6	39.27 −.01	41.3 0.3
20.4	58.70 .07	9.5 0.3	45.51 .23	77.0 1.8	15.08 .07	17.6 0.5	39.23 .05	40.9 0.3
30.3	58.61 .11	9.2 0.3	45.22 .32	78.6 1.4	14.98 .12	18.0 0.3	39.16 .09	40.7 0.3
Feb. 9.3	58.49 .13	9.0 0.3	44.87 .38	79.7 0.9	14.84 .15	18.3 +0.2	39.05 .13	40.4 0.2
19.3	58.34 −.15	8.7 −0.3	44.46 −.43	80.4 +0.5	14.68 −.17	18.4 0.0	38.91 −.15	40.2 −0.2
29.2	58.18 .16	8.4 0.3	44.02 .45	80.7 0.0	14.50 .19	18.3 −0.1	38.75 .16	40.0 0.2
Mar. 10.2	58.01 .16	8.1 0.3	43.57 .44	80.4 −0.5	14.30 .19	18.1 0.3	38.58 .17	39.8 0.2
20.2	57.85 .15	7.9 0.2	43.13 .42	79.6 1.0	14.11 .18	17.7 0.5	38.41 .16	39.6 0.2
30.2	57.71 .13	7.7 0.2	42.74 .37	78.4 1.4	13.94 .16	17.1 0.6	38.26 .14	39.5 0.1
Apr. 9.1	57.60 −.10	7.5 −0.1	42.40 −.30	76.8 −1.7	13.80 −.13	16.4 −0.7	38.13 −.12	39.4 −0.1
19.1	57.52 .06	7.4 0.0	42.14 .22	75.0 2.0	13.69 .09	15.7 0.8	38.03 .08	39.3 0.0
29.1	57.48 −.02	7.4 +0.1	41.96 .12	72.8 2.2	13.62 −.04	14.9 0.8	37.97 −.04	39.4 +0.1
May 9.1	57.49 +.03	7.5 0.2	41.89 −.02	70.5 2.3	13.61 +.01	14.1 0.8	37.95 .00	39.5 0.2
19.0	57.54 .08	7.7 0.3	41.92 +.08	68.2 2.3	13.65 .06	13.4 0.7	37.98 +.05	39.8 0.3
29.0	57.64 +.12	8.0 +0.4	42.05 +.18	65.8 −2.3	13.74 +.12	12.7 −0.6	38.05 +.09	40.1 +0.4
June 8.0	57.78 .16	8.6 0.6	42.29 .28	63.6 2.2	13.88 .17	12.2 0.5	38.16 .14	40.6 0.5
17.9	57.97 .20	9.2 0.7	42.62 .37	61.5 2.0	14.07 .21	11.8 0.3	38.32 .18	41.2 0.6
27.9	58.19 .24	10.0 0.8	43.03 .46	59.6 1.8	14.31 .25	11.5 −0.2	38.52 .21	41.9 0.7
July 7.9	58.45 .27	10.8 0.9	43.53 .53	58.0 1.5	14.58 .29	11.4 0.0	38.75 .24	42.7 0.8
17.9	58.72 +.29	11.8 +0.9	44.08 +.58	56.7 −1.2	14.88 +.31	11.5 +0.1	39.01 +.27	43.5 +0.8
27.8	59.02 .29	12.7 0.9	44.70 .63	55.7 0.8	15.20 .33	11.6 0.2	39.28 .29	44.4 0.8
Aug. 6.8	59.33 .31	13.7 0.9	45.35 .66	55.1 0.5	15.55 .35	11.9 0.3	39.58 .30	45.2 0.8
16.8	59.65 .32	14.6 0.9	46.02 .68	54.8 −0.1	15.90 .36	12.3 0.4	39.89 .31	46.0 0.7
26.8	59.97 .32	15.5 0.8	46.71 .69	54.8 +0.2	16.26 .36	12.8 0.5	40.20 .31	46.7 0.6
Sept. 5.7	60.28 +.31	16.2 +0.7	47.41 +.69	55.3 +0.6	16.62 +.36	13.4 +0.6	40.51 +.31	47.3 +0.5
15.7	60.59 .30	16.9 0.6	48.10 .68	56.0 0.9	16.98 .35	14.0 0.6	40.83 .31	47.8 0.4
25.7	60.89 .29	17.4 0.4	48.77 .66	57.1 1.3	17.33 .34	14.6 0.7	41.13 .30	48.1 0.3
Oct. 5.6	61.17 .28	17.7 0.3	49.42 .63	58.5 1.6	17.66 .33	15.3 0.7	41.43 .29	48.3 +0.1
15.6	61.44 .26	17.9 0.2	50.03 .58	60.2 1.8	17.98 .31	16.0 0.7	41.71 .27	48.3 0.0
25.6	61.69 +.24	18.0 +0.1	50.59 +.53	62.2 +2.1	18.28 +.29	16.7 +0.7	41.98 +.26	48.2 −0.1
Nov. 4.6	61.91 .22	18.0 0.0	51.10 .47	64.4 2.3	18.56 .26	17.4 0.7	42.22 .23	48.0 0.3
14.5	62.11 .19	17.9 −0.2	51.53 .39	66.8 2.4	18.81 .23	18.1 0.7	42.44 .21	47.7 0.3
24.5	62.27 .15	17.7 0.3	51.89 .31	69.3 2.5	19.02 .19	18.9 0.7	42.64 .18	47.3 0.4
Dec. 4.5	62.40 .11	17.4 0.3	52.15 .22	71.8 2.6	19.19 .15	19.6 0.7	42.79 .14	46.9 0.4
14.5	62.49 +.08	17.2 −0.3	52.32 +.12	74.4 +2.5	19.32 +.10	20.3 +0.7	42.91 +.10	46.5 −0.4
24.4	62.54 +.04	16.9 0.3	52.39 +.02	76.9 2.4	19.40 .05	21.0 0.7	42.99 .06	46.1 0.4
34.4	62.55 −.01	16.6 −0.3	52.35 −.09	79.3 +2.2	19.43 +.01	21.7 +0.6	43.03 +.01	45.7 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Aurigæ. (*Capella.*)		*β* Orionis. (*Rigel.*)		*β* Tauri.		Groombridge 966.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 5 9	° ′ +45 53	h m 5 9	° ′ − 8 18	h m 5 19	° ′ +28 31	h m 5 25	° ′ +74 58
	s	″	s	″	s	″	s	″
Jan. 0.4	2.66 +.04	43.6 +1.4	34.07 +.02	73.4 −1.7	44.98 +.06	19.8 +0.4	55.42+ .04	41.8 +2.8
10.4	2.67 −.02	44.9 1.3	34.07 −.02	75.0 1.5	45.02 +.01	20.2 0.4	55.35− .14	44.6 2.6
20.4	2.62 .08	46.1 1.1	34.03 .06	76.4 1.3	44.99 −.04	20.6 0.3	55.13 .30	47.1 2.4
30.4	2.52 .13	47.2 0.9	33.95 .10	77.6 1.1	44.93 .09	20.9 0.3	54.75 .44	49.3 2.0
Feb. 9.3	2.36 .18	48.0 0.7	33.83 .13	78.5 0.8	44.82 .13	21.1 0.2	54.25 .56	51.1 1.6
19.3	2.16 −.21	48.4 +0.4	33.69 −.15	79.2 −0.6	44.67 −.16	21.3 +0.1	53.63 − .65	52.5 +1.1
29.3	1.93 .23	48.7 +0.1	33.52 .17	79.7 0.3	44.50 .17	21.3 0.0	52.94 .71	53.3 +0.6
Mar. 10.2	1.69 .24	48.6 −0.2	33.35 .17	79.9 −0.1	44.32 .18	21.2 −0.1	52.22 .73	53.6 0.0
20.2	1.46 .23	48.2 0.5	33.18 .17	79.8 +0.2	44.14 .18	21.0 0.3	51.48 .72	53.4 −0.5
30.2	1.23 .21	47.5 0.8	33.01 .15	79.5 0.4	43.96 .16	20.7 0.4	50.78 .67	52.6 1.0
Apr 9.2	1.04 −.17	46.6 −1.0	32.87 −.13	78.9 +0.7	43.81 −.14	20.3 −0.4	50.15− .59	51.3 −1.5
19.1	0.88 .13	45.5 1.2	32.75 .10	78.1 0.9	43.69 .10	19.8 0.5	49.60 .49	49.6 1.9
29.1	0.78 .08	44.2 1.3	32.67 .06	77.1 1.1	43.60 .06	19.3 0.5	49.17 .36	47.5 2.2
May 9.1	0.73 −.02	42.8 1.4	32.63 −.02	75.8 1.4	43.56 −.02	18.7 0.5	48.88 .22	45.2 2.5
19.1	0.75 +.05	41.4 1.4	32.63 +.02	74.4 1.5	43.57 +.03	18.2 0.5	48.74− .06	42.6 2.6
29.0	0.83 +.11	40.0 −1.4	32.67 +.06	72.7 +1.7	43.63 +.08	17.8 −0.4	48.75+ .09	40.0 −2.7
June 8.0	0.96 .17	38.7 1.3	32.76 .11	71.0 1.8	43.74 .13	17.4 0.3	48.92 .24	37.3 2.7
18.0	1.16 .22	37.5 1.2	32.88 .15	69.1 1.9	43.89 .18	17.1 0.2	49.24 .39	34.6 2.6
27.9	1.40 .27	36.4 1.0	33.05 .18	67.2 1.9	44.09 .21	17.0 −0.1	49.70 .53	32.1 2.4
July 7.9	1.70 .31	35.5 0.8	33.24 .21	65.3 1.9	44.32 .25	16.9 0.0	50.29 .65	29.8 2.2
17.9	2.03 +.35	34.7 −0.6	33.47 +.24	63.5 +1.8	44.59 +.28	17.0 +0.1	51.00+ .76	27.7 −1.9
27.9	2.40 .38	34.2 0.4	33.72 .26	61.7 1.6	44.88 .30	17.1 0.2	51.81 .85	25.9 1.6
Aug. 6.8	2.79 .40	33.9 0.2	33.99 .28	60.2 1.4	45.19 .32	17.3 0.2	52.71 .93	24.5 1.3
16.8	3.20 .41	33.7 −0.1	34.28 .29	58.9 1.2	45.52 .33	17.6 0.3	53.67 .99	23.4 0.9
26.8	3.62 .42	33.8 +0.1	34.57 .29	57.9 0.9	45.86 .34	17.9 0.3	54.68 1.03	22.6 0.5
Sept. 5.8	4.05 +.43	34.0 +0.3	34.86 +.29	57.2 +0.5	46.20 +.34	18.2 +0.3	55.73+1.05	22.3 −0.1
15.7	4.47 .42	34.4 0.5	35.16 .29	56.8 +0.2	46.54 .34	18.5 0.3	56.79 1.06	22.4 +0.3
25.7	4.89 .41	35.0 0.6	35.45 .29	56.8 −0.2	46.89 .34	18.8 0.3	57.85 1.05	22.9 0.7
Oct. 5.7	5.30 .40	35.7 0.8	35.73 .28	57.2 0.6	47.22 .33	19.1 0.3	58.89 1.02	23.7 1.1
15.6	5.70 .38	36.5 0.9	36.00 .26	58.0 0.9	47.54 .32	19.4 0.3	59.89 .97	25.0 1.4
25.6	6.07 +.36	37.5 +1.1	36.26 +.24	59.1 −1.2	47.85 +.30	19.7 +0.3	60.83+ .90	26.6 +1.8
Nov. 4.6	6.41 .33	38.7 1.2	36.49 .22	60.4 1.5	48.14 .28	20.0 0.3	61.69 .82	28.5 2.1
14.6	6.72 .29	39.9 1.3	36.70 .19	62.0 1.7	48.41 .25	20.2 0.3	62.46 .71	30.8 2.4
24.5	7.00 .25	41.2 1.4	36.88 .16	63.7 1.8	48.64 .22	20.5 0.3	63.11 .58	33.3 2.6
Dec. 4.5	7.22 .20	42.6 1.4	37.02 .13	65.6 1.8	48.84 .18	20.9 0.3	63.63 .44	36.0 2.8
14.5	7.39 +.14	44.1 +1.4	37.13 +.09	67.4 −1.8	48.99 +.13	21.2 +0.4	64.00+ .29	38.8 +2.8
24.5	7.50 .08	45.5 1.4	37.20 .05	69.2 1.7	49.10 .09	21.6 0.4	64.20+ .12	41.7 2.8
34.4	7.55 +.02	46.9 +1.3	37.23 +.01	70.9 1.6	49.16 +.05	22.0 +0.4	64.25 .06	44.5 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ε Orionis.		α Columbæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declinati *South.*
	h m 5 26	° ′ — 0 22	h m 5 28	° ′ —17 53	h m 5 30	° ′ — 1 15	h m 5 35	° —34
	s	″	s	″	s	″	s	″
Jan. 0.4	43.32 +.04	28.1 −1.3	10.35 +.02	43.9 −2.1	57.89 +.05	60.1 −1.3	54.98 .00	43.4 −
10.4	43.35 .00	29.3 1.2	10.36 −.02	46.0 2.0	57.91 .00	61.4 1.2	54.96 −.05	46.1 2
20.4	43.33 −.04	30.5 1.0	10.32 .06	47.9 1.7	57.90 −.04	62.6 1.1	54.89 .09	48.6 2
30.4	43.26 .08	31.4 0.8	10.23 .10	49.5 1.4	57.84 .08	63.5 0.9	54.77 .14	50.7 1
Feb. 9.3	43.16 .11	32.2 0.7	10.11 .14	50.8 1.1	57.74 .11	64.3 0.7	54.61 .18	52.4 1
19.3	43.03 −.14	32.7 −0.5	9.96 −.16	51.8 −0.8	57.61 −.14	65.0 −0.5	54.42 −.21	53.8 −1
29.3	42.88 .16	33.2 0.3	9.79 .18	52.4 0.5	57.46 .16	65.4 0.3	54.20 .23	54.6 0
Mar. 10.3	42.72 .17	33.4 −0.1	9.60 .19	52.7 −0.1	57.29 .17	65.6 −0.1	53.96 .24	55.1 −0
20.2	42.55 .16	33.4 0.0	9.41 .19	52.7 +0.2	57.12 .17	65.7 0.0	53.73 .23	55.0 +0
30.2	42.39 .15	33.3 +0.2	9.23 .17	52.3 0.5	56.96 .15	65.5 +0.2	53.50 .22	54.5 0
Apr. 9.2	42.24 −.13	33.0 +0.4	9.06 −.15	51.6 +0.8	56.81 −.13	65.2 +0.4	53.28 −.20	53.6 +1
19.2	42.12 .10	32.5 0.6	8.92 .12	50.6 1.1	56.69 .11	64.7 0.6	53.10 .17	52.3 1
29.1	42.04 .07	31.8 0.8	8.81 .09	49.3 1.4	56.60 .07	64.0 0.8	52.94 .13	50.6 1
May 9.1	41.99 −.03	31.0 0.9	8.74 .05	47.8 1.7	56.55 −.03	63.1 1.0	52.83 .09	48.6 2
19.1	41.98 +.01	30.0 1.1	8.71 −.01	46.0 1.9	56.53 +.01	62.1 1.1	52.76 −.04	46.3 2
29.0	42.01 +.06	28.8 +1.2	8.73 +.04	44.0 +2.1	56.57 +.05	60.9 +1.2	52.74 .00	43.7 +2
June 8.0	42.09 .10	27.5 1.3	8.79 .08	41.8 2.2	56.64 .09	59.6 1.3	52.77 +.05	41.0 2
18.0	42.21 .14	26.1 1.4	8.89 .12	39.6 2.3	56.75 .13	58.2 1.4	52.84 .10	38.2 2
28.0	42.37 .17	24.7 1.5	9.03 .16	37.3 2.3	56.90 .17	56.7 1.5	52.96 .14	35.3 2
July 7.9	42.55 .20	23.2 1.5	9.21 .19	35.0 2.2	57.09 .20	55.2 1.5	53.13 .18	32.4 2
17.9	42.77 +.23	21.8 +1.4	9.42 +.22	32.8 +2.1	57.30 +.23	53.7 +1.4	53.33 +.22	29.7 +2
27.9	43.02 .25	20.4 1.3	9.65 .25	30.8 1.9	57.54 .25	52.3 1.3	53.56 .25	27.2 2
Aug. 6.8	43.28 .27	19.1 1.2	9.91 .27	28.9 1.7	57.81 .27	51.0 1.2	53.83 .28	25.0 2
16.8	43.56 .28	18.0 1.0	10.19 .28	27.4 1.4	58.08 .28	49.9 1.0	54.12 .30	23.1 1
26.8	43.85 .29	17.2 0.7	10.48 .29	26.2 1.0	58.37 .29	49.0 0.7	54.42 .31	21.6 1
Sept. 5.8	44.14 +.30	16.5 +0.5	10.77 +.30	25.4 +0.6	58.66 +.29	48.4 +0.5	54.74 +.32	20.7 +0
15.7	44.44 .30	16.2 +0.2	11.07 .30	25.1 +0.1	58.95 .29	48.1 +0.2	55.07 .33	20.3 +0
25.7	44.73 .29	16.2 −0.1	11.37 .30	25.2 −0.3	59.25 .29	48.1 −0.1	55.39 .32	20.5 −0
Oct. 5.7	45.02 .28	16.4 0.4	11.66 .29	25.7 0.8	59.54 .29	48.3 0.4	55.71 .31	21.2 1
15.7	45.30 .27	17.0 0.7	11.94 .28	26.7 1.2	59.82 .28	48.9 0.7	56.02 .30	22.4 1
25.6	45.57 +.26	17.8 −0.9	12.21 +.26	28.1 −1.6	60.09 +.26	49.8 −1.0	56.31 +.28	24.2 −
Nov. 4.6	45.82 .24	18.9 1.1	12.45 .23	29.8 1.9	60.35 .24	50.9 1.2	56.58 .25	26.4
14.6	46.05 .21	20.1 1.3	12.68 .21	31.8 2.1	60.57 .22	52.2 1.4	56.81 .22	29.0
24.5	46.25 .18	21.4 1.4	12.87 .18	34.0 2.3	60.78 .19	53.6 1.5	57.01 .18	31.8
Dec. 4.5	46.42 .15	22.9 1.4	13.03 .14	36.4 2.4	60.95 .15	55.1 1.5	57.17 .13	34.8
14.5	46.55 +.11	24.3 −1.4	13.15 +.10	38.8 −2.3	61.09 +.12	56.6 −1.5	57.28 +.09	37.9 −
24.5	46.64 .07	25.7 1.4	13.22 .05	41.0 2.2	61.18 .07	58.1 1.4	57.34 +.04	40.9
34.4	46.69 +.03	27.1 −1.3	13.25 +.01	43.3 −2.1	61.24 +.03	59.5 −1.3	57.35 −.01	43.8 −

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		ν Orionis.		22 Camelop. (H.)		μ Geminorum.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 5 49	° ′ + 7 23	h m 6 1	° ′ +14 46	h m 6 7	° ′ +69 21	h m 6 16	° ′ +22 34
	s	″	s	″	s	″	s	″
n. 0.5	34.27 +.07	21.9 −0.9	39.99 +.09	57.5 −0.5	27.72 +.15	31.0 +2.6	42.17 +.11	6.9 0.0
10.4	34.32 +.03	21.0 0.8	40.06 +.04	57.0 0.4	27.81 +.03	33.6 2.5	42.25 .06	6.9 0.0
20.4	34.32 −.02	20.2 0.7	40.07 −.01	56.6 0.3	27.78 −.10	36.0 2.4	42.29 +.01	7.0 +0.1
30.4	34.28 .06	19.6 0.6	40.04 .05	56.3 0.3	27.62 .22	38.3 2.2	42.27 −.04	7.1 0.1
b. 9.4	34.20 .10	19.0 0.5	39.97 .09	56.1 0.2	27.34 .32	40.3 1.8	42.21 .09	7.2 0.1
19.3	34.08 −.13	18.6 −0.3	39.86 −.12	55.9 −0.1	26.98 −.41	42.0 +1.4	42.10 −.12	7.4 +0.1
29.3	33.94 .15	18.3 0.2	39.72 .15	55.8 0.1	26.53 .47	43.2 1.0	41.96 .15	7.5 0.1
ar. 10.3	33.78 .16	18.2 −0.1	39.56 .16	55.8 −0.1	26.03 .51	44.0 +0.5	41.80 .17	7.6 +0.1
20.3	33.61 .17	18.1 0.0	39.39 .17	55.7 0.0	25.51 .52	44.3 0.0	41.63 .17	7.7 0.0
30.2	33.45 .16	18.1 +0.1	39.22 .16	55.7 0.0	24.99 .51	44.0 −0.5	41.45 .17	7.7 0.0
r. 9.2	33.30 −.14	18.2 +0.2	39.07 −.14	55.7 0.0	24.50 −.47	43.3 −0.9	41.29 −.15	7.6 −0.1
19.2	33.17 .11	18.5 0.3	38.94 .12	55.7 +0.1	24.06 .40	42.1 1.4	41.14 .13	7.5 0.1
29.1	33.07 .08	18.8 0.4	38.83 .09	55.8 0.1	23.69 .32	40.5 1.8	41.03 .10	7.3 0.2
y 9.1	33.01 −.04	19.3 0.5	38.77 .05	56.0 0.2	23.41 .23	38.6 2.1	40.95 .06	7.2 0.2
19.1	32.99 .00	19.8 0.6	38.74 −.01	56.2 0.2	23.23 .12	36.4 2.3	40.91 −.02	7.0 0.2
29.1	33.01 +.04	20.5 +0.7	38.75 +.04	56.4 +0.3	23.16 −.01	34.0 −2.4	40.91 +.02	6.9 −0.1
ne 8.0	33.08 .08	21.3 0.8	38.81 .08	56.8 0.4	23.20 +.10	31.6 2.5	40.96 .07	6.7 0.1
18.0	33.18 .12	22.2 0.9	38.91 .12	57.2 0.4	23.35 .21	29.1 2.5	41.05 .11	6.7 −0.1
28.0	33.32 .16	23.2 1.0	39.05 .16	57.7 0.5	23.61 .31	26.6 2.4	41.18 .15	6.6 0.0
ly 8.0	33.50 .19	24.1 1.0	39.22 .19	58.2 0.5	23.97 .41	24.2 2.3	41.35 .19	6.6 0.0
17.9	33.71 +.22	25.1 +1.0	39.43 +.22	58.7 +0.6	24.43 +.49	21.9 −2.1	41.55 +.22	6.7 0.0
27.9	33.94 .25	26.1 0.9	39.66 .25	59.3 0.5	24.96 .57	19.9 1.9	41.79 .25	6.7 +0.1
g. 6.9	34.20 .26	27.0 0.8	39.92 .27	59.8 0.5	25.57 .64	18.1 1.7	42.05 .27	6.8 +0.1
16.8	34.47 .28	27.8 0.7	40.19 .28	60.3 0.4	26.24 .69	16.5 1.4	42.33 .29	6.8 0.0
26.8	34.76 .29	28.4 0.5	40.48 .30	60.6 0.3	26.96 .74	15.3 1.1	42.63 .31	6.9 0.0
pt. 5.8	35.05 +.30	28.8 +0.3	40.79 +.31	60.9 +0.2	27.72 +.77	14.4 −0.7	42.94 +.32	6.8 −0.1
15.8	35.35 .30	29.1 +0.1	41.09 .31	61.0 0.0	28.50 .79	13.8 −0.4	43.26 .33	6.7 0.1
25.7	35.66 .30	29.1 −0.1	41.41 .31	60.9 −0.1	29.30 .80	13.6 0.0	43.58 .33	6.5 0.2
t. 5.7	35.96 .30	28.9 0.3	41.72 .31	60.7 0.3	30.10 .79	13.8 +0.3	43.91 .33	6.3 0.3
15.7	36.25 .29	28.4 0.5	42.03 .31	60.4 0.4	30.88 .78	14.3 0.7	44.24 .33	6.0 0.3
25.7	36.54 +.28	27.8 −0.7	42.33 +.30	59.9 −0.5	31.65 +.74	15.2 +1.1	44.57 +.32	5.6 −0.4
v. 4.6	36.81 .26	27.0 0.9	42.62 .28	59.3 0.6	32.37 .69	16.4 1.4	44.88 .30	5.2 0.4
14.6	37.06 .24	26.0 1.0	42.89 .26	58.7 0.7	33.04 .63	18.0 1.7	45.17 .28	4.8 0.4
24.6	37.29 .21	25.0 1.1	43.14 .23	58.0 0.7	33.64 .55	19.9 2.0	45.45 .26	4.4 0.4
c. 4.5	37.49 .18	23.9 1.1	43.36 .20	57.3 0.7	34.14 .46	22.0 2.3	45.69 .23	4.1 0.3
14.5	37.65 +.14	22.9 −1.1	43.54 +.16	56.6 −0.7	34.55 +.35	24.4 +2.4	45.90 +.19	3.8 −0.2
24.5	37.77 .10	21.8 1.0	43.68 .12	56.0 0.6	34.84 .23	26.9 2.5	46.06 .14	3.6 −0.1
34.5	37.85 +.05	20.8 −1.0	43.77 +.07	55.4 −0.5	35.01 +.10	29.5 +2.6	46.18 +.09	3.5 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*a* Argûs. (*Canopus.*)		*γ* Geminorum.		*a* Canis Majoris. (*Sirius.*)		*ε* Canis Majoris	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declin *Sout*
	h m	° ′	h m	° ′	h m	° ′	h m	°
	6 21	−52 37	6 31	+16 29	6 40	−16 34	6 54	−28
	s	″	s	″	s	″	s	″
Jan. 0.5	41.03 +.01	74.4 −3.6	44.18 +.12	22.3 −0.5	35.79 +.10	17.8 −2.4	34.15 +.10	44.5
10.5	41.01 −.06	77.9 3.4	44.28 .07	21.9 0.4	35.86 +.05	20.2 2.3	34.23 +.05	47.5
20.4	40.92 .13	81.1 3.1	44.33 +.02	21.5 0.3	35.89 .00	22.4 2.1	34.25 .00	50.3
30.4	40.76 .19	84.0 2.7	44.32 −.03	21.3 0.2	35.86 −.05	24.4 1.9	34.22 −.06	52.8
Feb. 9.4	40.54 .25	86.5 2.3	44.27 .07	21.2 −0.1	35.79 .09	26.1 1.6	34.14 .10	55.0
19.4	40.27 −.29	88.6 −1.8	44.18 −.11	21.1 0.0	35.68 −.13	27.5 −1.3	34.02 −.14	56.9
29.3	39.96 .34	90.2 1.3	44.05 .14	21.1 0.0	35.54 .16	28.6 0.9	33.86 .17	58.5
Mar. 10.3	39.62 .35	91.3 0.8	43.90 .16	21.1 0.0	35.37 .17	29.4 0.6	33.67 .20	59.6
20.3	39.26 .36	91.8 −0.3	43.74 .17	21.1 +0.1	35.18 .18	29.8 −0.3	33.46 .21	60.3
30.3	38.91 .35	91.9 +0.2	43.57 .17	21.2 0.1	35.00 .18	30.0 0.0	33.25 .21	60.6
Apr. 9.2	38.56 −.34	91.4 +0.7	43.40 −.15	21.2 +0.1	34.82 −.17	29.8 +0.3	33.04 −.20	60.4
19.2	38.24 .31	90.4 1.2	43.26 .13	21.3 0.1	34.65 .15	29.3 0.6	32.84 .19	59.9
29.2	37.95 .27	88.9 1.7	43.14 .10	21.4 0.1	34.51 .13	28.5 0.9	32.67 .16	59.0
May 9.1	37.70 .22	87.1 2.1	43.05 .07	21.5 0.1	34.39 .10	27.4 1.2	32.52 .13	57.8
19.1	37.50 .17	84.8 2.4	43.00 −.03	21.6 0.1	34.31 .06	26.1 1.4	32.40 .10	56.2
29.1	37.35 −.12	82.2 +2.7	42.99 +.01	21.7 +0.1	34.27 −.03	24.5 +1.6	32.33 −.06	54.4
June 8.1	37.27 −.06	79.3 3.0	43.02 .05	21.9 0.2	34.26 +.01	22.8 1.8	32.29 −.02	52.2
18.0	37.24 +.01	76.2 3.1	43.10 .09	22.2 0.2	34.29 .05	20.9 2.0	32.29 +.02	49.9
28.0	37.28 .07	73.0 3.2	43.21 .13	22.4 0.3	34.37 .09	18.9 2.0	32.34 .07	47.4
July 8.0	37.37 .12	69.8 3.2	43.36 .17	22.7 0.3	34.48 .13	16.9 2.0	32.42 .10	44.9
18.0	37.52 +.18	66.7 +3.1	43.54 +.20	23.1 +0.3	34.62 +.16	14.9 +1.9	32.55 +.14	42.4
27.9	37.73 .23	63.7 2.9	43.75 .22	23.4 0.3	34.79 .19	13.0 1.8	32.71 .18	40.0
Aug. 6.9	37.99 .28	60.9 2.6	43.99 .25	23.7 0.2	35.00 .22	11.3 1.6	32.90 .21	37.8
16.9	38.29 .32	58.6 2.2	44.25 .27	23.9 0.2	35.23 .24	9.8 1.4	33.12 .24	35.8
26.8	38.64 .35	56.6 1.7	44.52 .28	24.0 +0.1	35.48 .26	8.5 1.1	33.37 .26	34.1
Sept. 5.8	39.01 +.38	55.2 +1.1	44.82 +.30	24.0 0.0	35.75 +.27	7.6 +0.7	33.65 +.28	32.9
15.8	39.40 .40	54.3 +0.5	45.12 .31	23.9 −0.1	36.03 .29	7.2 +0.3	33.94 .30	32.0
25.8	39.81 .41	54.1 −0.1	45.43 .32	23.7 0.3	36.32 .30	7.1 −0.1	34.24 .31	31.8
Oct. 5.7	40.22 .41	54.5 0.7	45.75 .32	23.3 0.4	36.62 .30	7.4 0.6	34.56 .32	32.0
15.7	40.63 .40	55.5 1.3	46.07 .32	22.8 0.6	36.92 .30	8.3 1.0	34.88 .32	32.8
25.7	41.02 +.38	57.2 −1.9	46.39 +.31	22.2 −0.7	37.22 +.29	9.5 −1.4	35.20 +.31	34.0
Nov. 4.7	41.39 .35	59.4 2.5	46.69 .30	21.5 0.7	37.51 .28	11.2 1.8	35.51 .30	35.8
14.6	41.71 .30	62.1 2.9	46.99 .28	20.8 0.8	37.78 .26	13.1 2.1	35.81 .28	38.0
24.6	42.00 .25	65.3 3.3	47.26 .26	20.0 0.8	38.04 .24	15.4 2.3	36.08 .26	40.6
Dec. 4.6	42.22 .19	68.7 3.5	47.51 .23	19.2 0.7	38.26 .21	17.8 2.5	36.32 .22	43.4
14.5	42.38 +.13	72.2 −3.6	47.72 +.19	18.5 −0.7	38.45 +.17	20.3 −2.5	36.52 +.18	46.4
24.5	42.48 +.06	75.9 3.6	47.89 .15	17.9 0.6	38.60 .12	22.9 2.5	36.68 .13	49.4
34.5	42.50 −.01	79.4 −3.5	48.02 +.10	17.4 −0.5	38.70 +.08	25.4 −2.4	36.79 +.09	52.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Canis Majoris.		δ Geminorum.		Piazzi vii, 67.		α^2 Geminorum. (*Castor.*)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 4	° ′ −26 13	h m 7 13	° ′ +22 10	h m 7 20	° ′ +68 40	h m 7 27	° ′ +32 6
	s	″	s	″	s	″	s	″
l. 0.5	11.53 +.11	34.7 −2.9	56.78 +.17	28.9 −0.3	8.80 +.34	42.5 +2.4	60.20 +.19	62.4 +0.3
10.5	11.62 .06	37.6 2.8	56.93 .12	28.7 −0.1	9.08 .22	44.9 2.5	60.38 .14	62.7 0.4
20.5	11.66 +.01	40.3 2.6	57.02 .07	28.6 0.0	9.24 +.09	47.4 2.5	60.49 .09	63.2 0.6
30.4	11.64 −.04	42.8 2.3	57.06 +.02	28.7 +0.1	9.26 −.04	49.9 2.5	60.55 +.03	63.9 0.7
). 9.4	11.58 .09	45.0 2.0	57.04 −.04	28.8 0.2	9.16 .16	52.3 2.3	60.55 −.03	64.6 0.7
19.4	11.47 −.13	46.9 −1.7	56.98 −.08	29.1 +0.3	8.94 −.27	54.6 +2.1	60.49 −.08	65.4 +0.7
29.4	11.32 .16	48.4 1.3	56.87 .12	29.4 0.3	8.62 .36	56.5 1.7	60.38 .12	66.1 0.7
r. 10.3	11.15 .18	49.5 0.9	56.74 .15	29.6 0.3	8.23 .43	58.0 1.3	60.24 .15	66.8 0.6
20.3	10.95 .20	50.3 0.5	56.58 .16	29.9 0.3	7.77 .48	59.2 0.9	60.07 .18	67.3 0.5
30.3	10.75 .20	50.6 −0.2	56.41 .17	30.1 0.2	7.27 .50	59.8 +0.4	59.89 .18	67.7 0.3
:. 9.2	10.55 −.20	50.6 +0.2	56.24 −.16	30.3 +0.1	6.78 −.49	60.0 −0.1	59.70 −.18	68.0 +0.2
19.2	10.36 .18	50.2 0.6	56.08 .15	30.4 +0.1	6.29 .46	59.7 0.6	59.53 .17	68.1 0.0
29.2	10.18 .16	49.4 1.0	55.94 .13	30.5 0.0	5.85 .41	58.9 1.0	59.37 .15	68.0 −0.2
y 9.2	10.04 .13	48.3 1.3	55.83 .10	30.4 0.0	5.46 .35	57.6 1.4	59.23 .12	67.8 0.3
19.1	9.92 .10	46.8 1.6	55.75 .06	30.4 −0.1	5.15 .27	56.0 1.8	59.13 .08	67.4 0.4
29.1	9.85 −.06	45.1 +1.9	55.71 −.02	30.3 −0.1	4.93 −.18	54.1 −2.1	59.07 −.04	66.9 −0.5
ie 8.1	9.81 −.02	43.1 2.1	55.70 +.02	30.2 0.1	4.79 −.08	51.8 2.3	59.05 .00	66.3 0.6
18.1	9.81 +.02	40.9 2.2	55.74 .05	30.0 0.1	4.76 +.02	49.4 2.5	59.08 +.04	65.7 0.7
28.0	9.85 .06	38.6 2.3	55.81 .09	29.9 0.2	4.83 .12	46.8 2.6	59.14 .09	65.0 0.8
y 8.0	9.92 .10	36.2 2.4	55.93 .13	29.7 0.2	5.00 .21	44.2 2.6	59.25 .12	64.2 0.8
18.0	10.04 +.13	33.8 +2.4	56.08 +.16	29.5 −0.2	5.26 +.31	41.6 −2.6	59.39 +.16	63.4 −0.8
28.0	10.19 .17	31.5 2.2	56.26 .19	29.3 0.2	5.61 .39	39.0 2.5	59.57 .20	62.5 0.8
g. 6.9	10.38 .20	29.4 2.0	56.46 .22	29.1 0.3	6.04 .47	36.5 2.4	59.78 .23	61.7 0.9
16.9	10.59 .23	27.4 1.8	56.70 .25	28.8 0.3	6.56 .54	34.1 2.2	60.03 .26	60.8 0.9
26.9	10.83 .25	25.8 1.4	56.96 .27	28.5 0.4	7.13 .61	32.0 2.0	60.30 .28	59.9 0.9
t. 5.8	11.10 +.27	24.6 +1.0	57.24 +.29	28.1 −0.5	7.77 +.66	30.1 −1.8	60.59 +.30	59.0 −0.9
15.8	11.38 .29	23.8 0.5	57.53 .30	27.6 0.6	8.46 .71	28.4 1.5	60.90 .32	58.1 0.9
25.8	11.68 .31	23.5 +0.1	57.85 .32	27.0 0.6	9.18 .74	27.1 1.2	61.24 .34	57.2 0.9
. 5.8	11.99 .31	23.7 −0.5	58.17 .33	26.3 0.7	9.94 .77	26.1 0.8	61.59 .35	56.3 0.9
15.7	12.31 .32	24.4 1.0	58.50 .33	25.5 0.8	10.71 .78	25.5 0.4	61.95 .36	55.5 0.8
25.7	12.62 +.31	25.7 −1.5	58.84 +.34	24.7 −0.8	11.49 +.77	25.2 −0.1	62.31 +.37	54.7 −0.8
r. 4.7	12.93 .30	27.4 1.9	59.17 .33	23.9 0.8	12.26 .76	25.3 +0.4	62.68 .36	53.9 0.7
14.6	13.23 .29	29.5 2.3	59.50 .32	23.1 0.8	13.01 .72	25.9 0.8	63.04 .35	53.3 0.6
24.6	13.51 .26	31.9 2.6	59.81 .30	22.3 0.7	13.71 .67	26.9 1.2	63.39 .33	52.8 0.4
:. 4.6	13.76 .23	34.7 2.8	60.10 .27	21.6 0.6	14.35 .60	28.2 1.5	63.71 .31	52.5 −0.2
14.6	13.97 +.19	37.5 −2.9	60.36 +.23	21.0 −0.5	14.91 +.51	30.0 +1.9	64.00 +.27	52.4 0.0
24.5	14.14 .14	40.5 3.0	60.58 .20	20.5 0.4	15.37 .41	32.0 2.1	64.25 .23	52.4 +0.2
34.5	14.26 +.10	43.5 −2.9	60.76 +.15	20.2 −0.2	15.72 +.29	34.2 +2.3	64.46 +.18	52.7 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Minoris. (*Procyon.*)		β Geminorum. (*Pollux.*)		φ Geminorum.		3 Ursæ Majoris (H.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 33	° ′ + 5 29	h m 7 38	° ′ +28 16	h m 7 47	° ′ +27 1	h m 8 2	° ′ +68 46
	s	″	s	″	s	″	s	″
Jan. 0.5	53.35 +.17	32.8 −1.4	59.31 +.20	40.0 0.0	10.11 +.21	67.2 −0.1	33.16 +.44	45.4 +2.1
10.5	53.50 .12	31.5 1.3	59.49 .15	40.1 +0.2	10.29 .16	67.2 +0.1	33.55 .32	47.6 2.3
20.5	53.60 .07	30.3 1.1	59.61 .10	40.3 0.4	10.43 .10	67.3 0.2	33.81 .20	50.0 2.5
30.5	53.65 +.02	29.2 0.9	59.68 +.04	40.7 0.5	10.50 +.05	67.6 0.4	33.94 +.07	52.5 2.5
Feb. 9.4	53.65 −.02	28.4 0.7	59.68 −.01	41.2 0.6	10.52 −.01	68.1 0.5	33.94 −.06	55.1 2.5
19.4	53.60 −.07	27.8 −0.6	59.64 −.06	41.8 +0.6	10.48 −.06	68.6 +0.5	33.82 −.18	57.5 +2.3
29.4	53.51 .11	27.3 0.4	59.55 .11	42.4 0.6	10.40 .10	69.2 0.6	33.59 .28	59.7 2.1
Mar. 10.4	53.39 .13	27.0 0.2	59.42 .14	43.0 0.6	10.28 .13	69.7 0.6	33.25 .37	61.7 1.8
20.3	53.25 .15	26.9 −0.1	59.27 .16	43.5 0.5	10.13 .16	70.3 0.5	32.84 .43	63.3 1.4
30.3	53.09 .16	26.8 0.0	59.10 .17	43.9 0.4	9.97 .17	70.7 0.4	32.38 .47	64.5 0.9
Apr. 9.3	52.93 −.16	26.9 +0.1	58.92 −.17	44.3 +0.3	9.79 −.17	71.1 +0.3	31.89 −.49	65.2 +0.4
19.2	52.78 .14	27.1 0.2	58.75 .16	44.5 +0.2	9.63 .16	71.3 0.2	31.40 .48	65.3 0.0
29.2	52.64 .13	27.4 0.3	58.59 .14	44.5 0.0	9.47 .14	71.4 +0.1	30.93 .46	65.1 −0.5
May 9.2	52.52 .10	27.8 0.4	58.46 .11	44.4 −0.1	9.34 .12	71.4 −0.1	30.49 .41	64.3 1.0
19.2	52.43 .07	28.3 0.5	58.36 .08	44.2 0.2	9.23 .09	71.2 0.2	30.11 .34	63.1 1.4
29.1	52.38 −.04	28.8 +0.6	58.29 −.05	43.9 −0.3	9.17 −.05	71.0 −0.3	29.80 −.27	61.4 −1.8
June 8.1	52.35 −.01	29.4 0.6	58.26 −.01	43.5 0.4	9.13 −.01	70.7 0.4	29.58 .18	59.5 2.1
18.1	52.36 +.03	30.1 0.7	58.27 +.03	43.0 0.5	9.14 +.03	70.3 0.4	29.44 −.09	57.2 2.4
28.0	52.41 .06	30.8 0.7	58.32 .07	42.5 0.5	9.18 .06	69.8 0.5	29.40 +.01	54.7 2.6
July 8.0	52.49 .10	31.5 0.7	58.41 .11	41.9 0.5	9.27 .10	69.3 0.5	29.46 .10	52.0 2.7
18.0	52.60 +.13	32.2 +0.7	58.54 +.15	41.3 −0.6	9.38 +.14	68.8 −0.6	29.61 +.19	49.3 −2.8
28.0	52.74 .16	32.9 0.6	58.70 .18	40.7 0.6	9.54 .17	68.2 0.6	29.85 .28	46.5 2.8
Aug. 6.9	52.91 .18	33.4 0.5	58.90 .21	40.0 0.7	9.72 .20	67.5 0.7	30.18 .37	43.7 2.7
16.9	53.11 .21	33.9 0.4	59.12 .24	39.2 0.7	9.93 .23	66.8 0.7	30.59 .45	41.0 2.6
26.9	53.33 .23	34.2 +0.2	59.37 .26	38.5 0.8	10.17 .25	66.0 0.8	31.07 .52	38.4 2.5
Sept. 5.9	53.57 +.25	34.3 0.0	59.64 +.29	37.6 −0.8	10.44 +.28	65.2 −0.9	31.62 +.58	36.0 −2.3
15.8	53.83 .27	34.2 −0.2	59.94 .31	36.8 0.8	10.72 .30	64.3 0.9	32.24 .64	33.8 2.1
25.8	54.11 .29	33.8 0.5	60.25 .33	35.9 0.9	11.03 .32	63.3 0.9	32.91 .69	31.9 1.8
Oct. 5.8	54.41 .30	33.2 0.7	60.58 .34	34.9 0.9	11.36 .33	62.3 1.0	33.63 .73	30.2 1.5
15.8	54.71 .31	32.3 1.0	60.92 .35	34.0 0.9	11.70 .34	61.3 1.0	34.38 .76	28.9 1.1
25.7	55.02 +.31	31.3 −1.2	61.28 +.36	33.0 −0.9	12.05 +.35	60.3 −1.0	35.15 +.78	28.0 −0.7
Nov. 4.7	55.33 .31	30.0 1.4	61.63 .36	32.1 0.8	12.40 .35	59.3 1.0	35.93 .78	27.5 −0.3
14.7	55.64 .30	28.5 1.5	61.98 .35	31.2 0.7	12.75 .35	58.4 0.9	36.71 .76	27.5 +0.2
24.6	55.94 .29	27.0 1.6	62.32 .33	30.5 0.6	13.09 .33	57.5 0.8	37.45 .72	27.8 0.6
Dec. 4.6	56.22 .26	25.4 1.6	62.64 .31	29.9 0.5	13.42 .31	56.8 0.6	38.15 .67	28.6 1.0
14.6	56.47 +.23	23.8 −1.6	62.93 +.28	29.5 −0.3	13.71 +.28	56.3 −0.5	38.79 +.59	29.9 +1.5
24.6	56.68 .19	22.2 1.5	63.19 .24	29.3 0.1	13.97 .24	55.9 0.3	39.34 .49	31.6 1.8
34.5	56.86 +.15	20.8 −1.4	63.39 +.19	29.2 −0.1	14.19 +.19	55.7 −0.1	39.79 +.40	33.6 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argûs (ρ).		η Cancri.		ε Hydræ.		ι Ursæ Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 8 3	° ′ −24 0	h m 8 26	° ′ +20 47	h m 8 41	° ′ + 6 47	h m 8 52	° ′ +48 26
	s	″	s	″	s	″	s	″
Jan. 0.6	8.53 +.18	9.6 −2.9	43.68 +.23	39.3 −0.6	17.84 +.23	62.2 −1.5	7.97 +.34	53.7 +0.7
10.6	8.69 .13	12.5 2.9	43.89 .19	38.7 0.5	18.05 .19	60.8 1.4	8.29 .28	54.5 1.0
20.5	8.79 .08	15.3 2.7	44.06 .14	38.3 0.3	18.21 .14	59.5 1.2	8.53 .21	55.6 1.3
30.5	8.84 +.03	18.0 2.5	44.17 .09	38.2 −0.1	18.33 .09	58.4 1.0	8.71 .14	57.1 1.5
Feb. 9.5	8.84 −.03	20.4 2.3	44.23 +.03	38.2 +0.1	18.39 +.04	57.6 0.8	8.81 +.06	58.7 1.7
19.4	8.79 −.07	22.6 −2.0	44.23 −.02	38.4 +0.3	18.41 −.01	56.9 −0.5	8.83 −.02	60.4 +1.7
29.4	8.70 .11	24.4 1.7	44.19 .07	38.7 0.4	18.38 .05	56.5 0.3	8.79 .07	62.2 1.7
Mar. 10.4	8.57 .14	25.9 1.3	44.10 .10	39.1 0.4	18.31 .09	56.2 −0.2	8.69 .13	63.8 1.6
20.4	8.41 .17	27.0 0.9	43.99 .13	39.6 0.5	18.20 .11	56.1 0.0	8.53 .17	65.4 1.4
30.3	8.23 .18	27.8 0.6	43.85 .15	40.1 0.4	18.08 .13	56.2 +0.1	8.34 .21	66.7 1.2
Apr. 9.3	8.05 −.18	28.2 −0.2	43.69 −.15	40.5 +0.4	17.94 −.14	56.3 +0.2	8.12 −.23	67.8 +0.9
19.3	7.87 .18	28.2 +0.1	43.54 .15	40.9 0.4	17.80 .14	56.6 0.3	7.88 .23	68.6 0.6
29.2	7.70 .17	27.9 0.5	43.39 .14	41.2 0.3	17.66 .13	56.9 0.4	7.65 .23	69.0 +0.3
May 9.2	7.54 .15	27.2 0.8	43.25 .12	41.4 0.2	17.53 .12	57.3 0.4	7.43 .21	69.1 −0.1
19.2	7.40 .12	26.3 1.1	43.14 .10	41.6 +0.1	17.42 .10	57.7 0.5	7.23 .18	68.8 0.4
29.2	7.30 −.09	25.0 +1.4	43.05 −.07	41.7 0.0	17.33 −.08	58.2 +0.5	7.06 −.15	68.2 −0.7
June 8.1	7.22 .06	23.5 1.7	43.00 .04	41.7 0.0	17.27 .05	58.7 0.5	6.93 .11	67.3 1.0
18.1	7.18 −.02	21.7 1.9	42.97 −.01	41.6 −0.1	17.23 −.02	59.2 0.5	6.84 .07	66.2 1.3
28.1	7.17 +.01	19.8 2.0	42.98 +.03	41.5 0.2	17.22 +.01	59.8 0.5	6.80 −.02	64.7 1.5
July 8.1	7.20 .04	17.7 2.1	43.02 .06	41.3 0.2	17.25 .04	60.3 0.5	6.79 +.02	63.1 1.7
18.0	7.26 +.08	15.6 +2.1	43.09 +.09	41.0 −0.3	17.30 +.07	60.8 +0.5	6.84 +.07	61.3 −1.9
28.0	7.35 .11	13.5 2.1	43.20 .12	40.7 0.4	17.38 .10	61.2 0.4	6.93 .11	59.3 2.0
Aug. 7.0	7.48 .14	11.5 1.9	43.33 .15	40.2 0.5	17.49 .12	61.5 0.3	7.07 .16	57.2 2.1
16.9	7.64 .17	9.6 1.7	43.50 .18	39.7 0.6	17.63 .15	61.7 +0.1	7.24 .20	55.1 2.2
26.9	7.83 .20	8.0 1.4	43.69 .21	39.0 0.7	17.79 .18	61.8 0.0	7.46 .24	52.9 2.2
Sept. 5.9	8.04 +.23	6.6 +1.1	43.91 +.23	38.2 −0.8	17.98 +.20	61.7 −0.2	7.72 +.28	50.7 −2.2
15.9	8.29 .26	5.7 0.7	44.15 .26	37.3 1.0	18.20 .23	61.4 0.4	8.03 .32	48.5 2.1
25.8	8.56 .28	5.2 +0.3	44.42 .28	36.3 1.1	18.45 .26	60.8 0.7	8.36 .35	46.4 2.0
Oct. 5.8	8.85 .30	5.2 −0.2	44.72 .30	35.2 1.2	18.71 .28	60.0 0.9	8.73 .39	44.4 1.9
15.8	9.16 .32	5.6 0.7	45.03 .32	33.9 1.3	19.00 .30	59.0 1.1	9.14 .41	42.5 1.8
25.8	9.49 +.32	6.6 −1.1	45.36 +.33	32.6 −1.3	19.31 +.31	57.7 −1.4	9.56 +.44	40.8 −1.6
Nov. 4.7	9.81 .32	8.0 1.6	45.70 .34	31.3 1.4	19.62 .32	56.2 1.5	10.01 .45	39.3 1.3
14.7	10.13 .32	9.8 2.1	46.04 .34	29.9 1.4	19.95 .33	54.6 1.7	10.47 .46	38.1 1.0
24.7	10.45 .30	12.1 2.4	46.38 .34	28.6 1.3	20.27 .32	52.9 1.7	10.93 .46	37.3 0.7
Dec. 4.6	10.74 .28	14.7 2.7	46.71 .32	27.3 1.2	20.59 .31	51.1 1.8	11.38 .44	36.7 −0.3
14.6	11.01 +.25	17.5 −2.8	47.02 +.29	26.2 −1.0	20.89 +.29	49.4 −1.7	11.81 +.41	36.6 +0.1
24.6	11.23 .21	20.4 2.9	47.30 .26	25.3 0.8	21.16 .25	47.7 1.6	12.20 .37	36.9 0.4
34.6	11.42 +.17	23.3 −2.9	47.54 +.22	24.5 0.5	21.40 +.22	46.1 1.5	12.54 +.32	37.5 +0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		σ² Ursæ Majoris.		κ Cancri.		ι Argûs.		1 Draconis (H.)	
		Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
		h m 9 1	° ′ +67 32	h m 9 2	° ′ +11 4	h m 9 14	° ′ −58 50	h m 9 22	° ′ +81 46
		s	″	s	″	s	″	s	″
Jan.	0.6	19.18 +.54	75.9 +1.5	8.59 +.26	71.8 −1.4	19.81 +.32	5.4 −3.6	26.88+1.33	58.4 +1.8
	10.6	19.67 .44	77.6 1.9	8.82 .21	70.5 1.2	20.09 .24	9.0 3.8	28.11 1.10	60.4 2.2
	20.5	20.05 .33	79.6 2.2	9.01 .16	69.4 1.0	20.29 .16	12.9 3.9	29.09 .84	62.8 2.6
	30.5	20.33 .21	82.0 2.4	9.15 .11	68.5 0.7	20.41 +.08	16.8 3.9	29.78 .54	65.5 2.8
Feb.	9.5	20.47 +.09	84.4 2.5	9.24 .06	67.9 0.5	20.45 .00	20.6 3.7	30.17+ .23	68.4 2.9
	19.5	20.50 −.03	87.0 +2.5	9.27 +.01	67.5 −0.3	20.40 −.08	24.2 −3.6	30.25− .08	71.4 +3.0
	29.4	20.40 .15	89.5 2.4	9.27 −.03	67.3 −0.1	20.28 .15	27.7 3.3	30.01 .38	74.4 2.8
Mar.	10.4	20.20 .24	91.9 2.2	9.21 .07	67.2 0.0	20.10 .21	30.8 3.0	29.49 .65	77.1 2.6
	20.4	19.91 .33	94.0 1.9	9.13 .10	67.3 +0.2	19.85 .27	33.6 2.6	28.72 .88	79.6 2.3
	30.4	19.55 .39	95.8 1.6	9.01 .12	67.5 0.3	19.56 .31	36.0 2.1	27.73 1.07	81.7 1.9
Apr.	9.3	19.13 −.43	97.1 +1.1	8.88 −.13	67.8 +0.3	19.24 −.33	37.9 −1.7	26.57−1.21	83.3 +1.4
	19.3	18.69 .45	98.1 0.7	8.75 .14	68.2 0.4	18.89 .35	39.3 1.2	25.30 1.30	84.5 0.8
	29.3	18.23 .45	98.5 +0.2	8.61 .13	68.6 0.4	18.54 .36	40.2 0.6	23.97 1.33	85.0 +0.3
May	9.2	17.79 .43	98.4 −0.3	8.48 .12	69.0 0.4	18.18 .35	40.6 −0.1	22.63 1.32	85.0 −0.3
	19.2	17.38 .39	97.9 0.8	8.36 .11	69.4 0.4	17.83 .34	40.4 +0.4	21.33 1.25	84.4 0.8
	29.2	17.01 −.34	96.9 −1.2	8.27 −.08	69.8 +0.4	17.51 −.31	39.8 +0.8	20.12−1.15	83.3 −1.4
June	8.2	16.70 .28	95.4 1.6	8.20 .06	70.1 0.4	17.21 .28	38.7 1.3	19.04 1.01	81.7 1.9
	18.1	16.46 .20	93.6 2.0	8.15 .03	70.5 0.3	16.94 .24	37.1 1.8	18.11 .83	79.6 2.3
	28.1	16.29 .13	91.4 2.3	8.13 −.01	70.8 0.3	16.72 .20	35.2 2.1	17.37 .64	77.1 2.7
July	8.1	16.21 −.05	89.0 2.6	8.14 +.02	71.1 0.2	16.54 .15	32.8 2.5	16.83 .43	74.3 3.0
	18.1	16.20 +.03	86.3 −2.8	8.17 +.05	71.3 +0.2	16.42 −.09	30.2 +2.7	16.51− .21	71.2 −3.2
	28.0	16.27 .12	83.4 2.9	8.24 .08	71.4 +0.1	16.36 −.03	27.4 2.9	16.41+ .01	67.9 3.4
Aug.	7.0	16.43 .20	80.5 3.0	8.33 .11	71.5 0.0	16.36 +.03	24.5 2.9	16.54 .24	64.5 3.5
	17.0	16.67 .28	77.5 3.0	8.45 .13	71.4 −0.2	16.42 .10	21.5 2.9	16.89 .47	61.0 3.5
	26.9	16.99 .35	74.5 3.0	8.60 .16	71.2 0.3	16.56 .17	18.7 2.7	17.47 .69	57.5 3.4
Sept.	5.9	17.38 +.43	71.6 −2.9	8.77 +.19	70.7 −0.5	16.76 +.23	16.1 +2.5	18.26+ .89	54.1 −3.3
	15.9	17.84 .50	68.7 2.7	8.98 .22	70.2 0.7	17.02 .30	13.7 2.1	19.26 1.09	50.8 3.2
	25.9	18.37 .56	66.1 2.5	9.21 .25	69.4 0.9	17.35 .36	11.8 1.7	20.44 1.27	47.8 2.9
Oct.	5.8	18.96 .62	63.7 2.3	9.47 .27	68.4 1.1	17.74 .41	10.4 1.1	21.80 1.43	45.0 2.6
	15.8	19.61 .66	61.5 2.0	9.75 .29	67.2 1.3	18.17 .45	9.6 0.6	23.31 1.57	42.6 2.2
	25.8	20.29 +.70	59.7 −1.6	10.05 +.31	65.8 −1.5	18.65 +.49	9.3 +0.1	24.94+1.68	40.6 −1.8
Nov.	4.8	21.01 .73	58.3 1.2	10.37 .33	64.2 1.6	19.14 .50	9.7 −0.7	26.66 1.75	39.0 1.3
	14.7	21.74 .74	57.3 0.8	10.70 .33	62.5 1.7	19.65 .51	10.7 1.4	28.44 1.78	38.0 0.8
	24.7	22.48 .73	56.8 - 0.3	11.04 .33	60.8 1.7	20.16 .49	12.4 2.0	30.23 1.78	37.4 - 0.2
Dec.	4.7	23.20 .70	56.8 +0.2	11.37 .32	59.1 1.7	20.64 .46	14.7 2.5	31.99 1.72	37.5 +0.4
	14.6	23.88 +.65	57.3 +0.7	11.68 +.30	57.4 −1.6	21.09 +.42	17.5 −3.0	33.67+1.61	38.1 +0.9
	24.6	24.50 .58	58.2 1.2	11.97 .27	55.8 1.5	21.48 .36	20.7 3.4	35.21 1.45	39.3 1.4
	34.6	25.04 +.50	59.6 +1.7	12.23 +.24	54.4 −1.3	21.81 +.30	24.2 −3.7	36.57+1.25	41.0 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Hydræ.		d Ursæ Majoris.		θ Ursæ Majoris.		ε Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 22	° ' − 8 12	h m 9 25	° ' +70 16	h m 9 25	° ' +52 8	h m 9 39	° ' +24 14
	s	"	s	"	s	"	s	"
Jan. 0.6	30.02 +.25	25.4 −2.4	22.02 +.64	63.3 +1.3	56.81 +.40	54.9 +0.5	58.65 +.30	65.5 −0.9
10.6	30.26 .21	27.7 2.3	22.61 .54	64.8 1.8	57.17 .33	55.7 0.9	58.94 .26	64.7 0.6
20.6	30.45 .17	29.9 2.1	23.09 .42	66.8 2.2	57.48 .27	56.8 1.3	59.18 .21	64.3 −0.3
30.5	30.60 .12	31.9 2.0	23.45 .29	69.1 2.4	57.71 .19	58.3 1.6	59.37 .16	64.1 0.0
Feb. 9.5	30.70 .07	33.8 1.7	23.67 .15	71.7 2.6	57.86 .11	60.0 1.8	59.50 .11	64.2 +0.2
19.5	30.75 +.02	35.4 −1.5	23.75 +.02	74.3 +2.7	57.93 +.04	61.9 +1.9	59.58 +.06	64.5 +0.4
29.5	30.75 −.02	36.8 1.2	23.70 −.11	77.0 2.6	57.93 −.04	63.9 2.0	59.61 .00	65.1 0.6
Mar. 10.4	30.71 .06	37.9 1.0	23.52 .23	79.6 2.4	57.86 .10	65.9 1.9	59.59 −.04	65.8 0.7
20.4	30.63 .09	38.7 0.7	23.24 .33	81.9 2.2	57.72 .16	67.7 1.8	59.53 .08	66.6 0.8
30.4	30.53 .11	39.3 0.5	22.86 .42	84.0 1.8	57.54 .20	69.4 1.6	59.44 .11	67.4 0.8
Apr. 9.3	30.41 −.13	39.7 −0.2	22.42 −.47	85.6 +1.4	57.32 −.23	70.9 +1.3	59.32 −.13	68.2 +0.8
19.3	30.28 .13	39.8 0.0	21.92 .51	86.8 1.0	57.08 .25	72.0 0.9	59.18 .14	69.0 0.7
29.3	30.14 .13	39.7 +0.2	21.40 .52	87.5 +0.5	56.83 .25	72.7 0.6	59.04 .14	69.7 0.6
May 9.3	30.01 .13	39.4 0.4	20.89 .51	87.7 −0.1	56.58 .24	73.1 +0.2	58.90 .14	70.2 0.5
19.2	29.89 .11	38.9 0.6	20.39 .51	87.4 0.6	56.34 .22	73.1 −0.2	58.77 .13	70.6 0.3
29.2	29.78 −.10	38.3 +0.7	19.93 −.43	86.6 −1.0	56.13 −.19	72.7 −0.6	58.65 −.11	70.9 +0.2
June 8.2	29.69 .08	37.5 0.8	19.53 .37	85.3 1.5	55.95 .16	71.9 0.9	58.55 .09	71.0 0.0
18.2	29.63 .05	36.6 1.0	19.19 .30	83.6 1.9	55.81 .12	70.8 1.3	58.48 .06	71.0 −0.1
28.1	29.59 .03	35.5 1.1	18.93 .22	81.5 2.3	55.71 .08	69.4 1.6	58.43 .04	70.8 0.3
July 8.1	29.57 −.01	34.4 1.1	18.76 .13	79.1 2.6	55.65 −.03	67.7 1.8	58.40 −.02	70.5 0.4
18.1	29.57 +.02	33.3 +1.1	18.67 −.04	76.4 −2.8	55.64 +.01	65.8 −2.0	58.41 +.01	70.0 −0.6
28.0	29.61 .05	32.2 1.1	18.68 +.05	73.4 3.0	55.68 .06	63.6 2.2	58.44 .04	69.3 0.7
Aug. 7.0	29.67 .08	31.1 1.0	18.77 .14	70.4 3.1	55.76 .11	61.3 2.4	58.50 .07	68.5 0.9
17.0	29.76 .10	30.1 0.9	18.95 .23	67.3 3.2	55.89 .15	58.8 2.5	58.59 .10	67.6 1.0
27.0	29.88 .13	29.3 0.7	19.23 .32	64.0 3.2	56.07 .20	56.3 2.6	58.70 .13	66.5 1.2
Sept. 5.9	30.03 +.16	28.6 +0.5	19.60 +.41	60.8 −3.1	56.29 +.25	53.7 −2.6	58.85 +.17	65.2 −1.3
15.9	30.21 .19	28.3 +0.2	20.04 .49	57.7 3.0	56.56 .29	51.1 2.5	59.04 .20	63.8 1.5
25.9	30.41 .22	28.2 −0.1	20.57 .57	54.8 2.8	56.87 .33	48.6 2.5	59.25 .23	62.3 1.6
Oct. 5.9	30.65 .25	28.5 0.5	21.18 .64	52.1 2.6	57.22 .37	46.2 2.4	59.50 .26	60.6 1.7
15.8	30.92 .28	29.2 0.8	21.85 .70	49.6 2.3	57.62 .41	43.8 2.3	59.77 .29	58.8 1.8
25.8	31.21 +.30	30.2 −1.2	22.58 +.75	47.5 −1.9	58.05 +.44	41.7 −2.0	60.08 +.32	57.0 −1.8
Nov. 4.8	31.52 .32	31.5 1.5	23.35 .79	45.8 1.5	58.51 .47	39.9 1.7	60.41 .34	55.1 1.8
14.7	31.84 .33	33.1 1.8	24.15 .81	44.5 1.0	58.99 .48	38.3 1.4	60.75 .35	53.3 1.8
24.7	32.17 .33	35.1 2.0	24.97 .81	43.7 −0.5	59.48 .49	37.1 1.0	61.11 .36	51.5 1.7
Dec. 4.7	32.49 .32	37.2 2.2	25.78 .79	43.4 0.0	59.96 .48	36.3 0.6	61.47 .36	49.9 1.5
14.7	32.81 +.30	39.5 −2.3	26.56 +.75	43.6 +0.5	60.43 +.46	35.9 −0.2	61.82 +.34	48.4 −1.3
24.6	33.10 .28	41.9 2.4	27.28 .68	44.4 1.0	60.88 .42	35.9 +0.3	62.16 .32	47.2 1.1
34.6	33.36 +.24	44.2 −2.3	27.92 +.61	45.7 +1.5	61.27 +.38	36.4 +0.7	62.46 +.29	46.2 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.		α Leonis. (*Regulus.*)		32 Ursæ Majoris.		γ¹ Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 46	° ′ +26 29	h m 10 2	° ′ +12 28	h m 10 10	° ′ +65 37	h m 10 14	° ′ +20 21
	s	″	s	″	s	″	s	″
Jan. 0.6	52.72 +.31	42.0 −0.8	51.47 +.30	27.9 −1.6	32.59 +.59	22.4 +0.7	15.86 +.31	57.0 −1.3
10.6	53.01 .27	41.3 0.5	51.75 .26	26.5 1.3	33.16 .53	23.3 1.1	16.16 .28	55.8 1.0
20.6	53.26 .22	40.9 −0.2	51.99 .22	25.2 1.0	33.65 .44	24.7 1.6	16.43 .24	55.0 0.7
30.6	53.46 .17	40.9 +0.1	52.19 .18	24.3 0.7	34.04 .34	26.5 2.0	16.64 .19	54.4 0.4
Feb. 9.5	53.60 .12	41.1 0.3	52.34 .13	23.6 0.5	34.33 .24	28.7 2.3	16.81 .14	54.2 −0.1
19.5	53.69 +.06	41.5 +0.6	52.44 +.08	23.1 −0.3	34.52 +.13	31.1 +2.5	16.93 +.09	54.2 +0.2
29.5	53.73 +.01	42.2 0.7	52.49 +.03	23.0 −0.1	34.59 +.02	33.7 2.6	16.99 +.04	54.5 0.4
Mar. 10.4	53.72 −.03	43.0 0.9	52.49 −.01	23.0 +0.1	34.55 −.09	36.3 2.6	17.01 .00	55.0 0.6
20.4	53.66 .07	44.0 0.9	52.46 .05	23.2 0.3	34.41 .18	38.8 2.4	16.98 −.04	55.6 0.7
30.4	53.57 .10	44.9 0.9	52.39 .08	23.6 0.4	34.19 .26	41.1 2.2	16.92 .08	56.4 0.8
Apr. 9.4	53.45 −.13	45.8 +0.9	52.30 −.10	24.0 +0.5	33.90 −.32	43.2 +1.9	16.83 −.10	57.2 +0.8
19.3	53.31 .14	46.7 0.8	52.18 .11	24.5 0.5	33.55 .36	44.9 1.5	16.72 .12	58.0 0.8
29.3	53.17 .14	47.4 0.7	52.06 .12	25.0 0.6	33.17 .39	46.1 1.0	16.60 .12	58.7 0.7
May 9.1	53.02 .14	48.0 0.5	51.94 .12	25.6 0.5	32.77 .40	46.9 0.6	16.47 .12	59.4 0.6
19.3	52.89 .13	48.5 0.4	51.82 .11	26.1 0.5	32.37 .39	47.3 +0.1	16.35 .12	60.0 0.5
29.2	52.77 −.11	48.8 +0.2	51.72 −.10	26.6 +0.5	31.98 −.37	47.1 −0.4	16.23 −.11	60.5 +0.4
June 8.2	52.66 .09	48.8 0.0	51.62 .08	27.0 0.4	31.63 .34	46.4 0.9	16.13 .10	60.8 0.2
18.2	52.58 .07	48.7 −0.2	51.54 .07	27.4 0.3	31.31 .29	45.3 1.3	16.04 .08	61.0 +0.1
28.2	52.52 .05	48.5 0.3	51.48 .05	27.7 0.3	31.04 .24	43.7 1.8	15.97 .06	61.0 0.0
July 8.1	52.49 −.02	48.0 0.5	51.45 −.03	27.9 0.2	30.83 .18	41.8 2.1	15.93 .04	60.9 −0.2
18.1	52.49 +.01	47.4 −0.7	51.43 .00	27.9 +0.1	30.67 −.12	39.5 −2.5	15.90 −.01	60.6 −0.3
28.1	52.51 .04	46.7 0.8	51.44 +.02	27.9 0.0	30.58 −.05	36.9 2.7	15.90 +.01	60.2 0.5
Aug. 7.0	52.56 .07	45.7 1.0	51.47 .05	27.8 −0.2	30.56 +.01	34.0 2.9	15.93 .04	59.6 0.7
17.0	52.65 .10	44.6 1.2	51.54 .08	27.5 0.3	30.61 .08	31.0 3.1	15.98 .07	58.8 0.8
27.0	52.76 .13	43.4 1.3	51.62 .10	27.1 0.5	30.73 .16	27.8 3.2	16.06 .09	57.9 1.0
Sept. 6.0	52.90 +.16	42.0 −1.5	51.74 +.13	26.4 −0.7	30.93 +.23	24.5 −3.3	16.17 +.13	56.8 −1.2
15.9	53.08 .19	40.4 1.6	51.89 .16	25.6 0.9	31.19 .30	21.2 3.2	16.31 .16	55.5 1.4
25.9	53.29 .23	38.8 1.7	52.07 .20	24.6 1.1	31.53 .37	18.0 3.2	16.49 .19	54.0 1.6
Oct, 5.9	53.53 .26	37.0 1.8	52.28 .23	23.3 1.3	31.94 .44	14.9 3.0	16.70 .23	52.4 1.7
15.8	53.81 .29	35.1 1.9	52.53 .26	21.9 1.5	32.42 .51	12.0 2.8	16.94 .26	50.6 1.9
25.8	54.11 +.32	33.2 −1.9	52.80 +.29	20.3 −1.7	32.95 +.56	9.3 −2.5	17.22 +.29	48.7 −1.9
Nov. 4.8	54.44 .34	31.3 1.9	53.10 .31	18.5 1.8	33.55 .61	6.9 2.2	17.52 .32	46.7 2.0
14.8	54.79 .35	29.4 1.9	53.42 .33	16.6 1.9	34.18 .65	4.9 1.8	17.85 .34	44.6 2.0
24.7	55.15 .36	27.6 1.7	53.76 .34	14.6 1.9	34.84 .67	3.4 1.3	18.20 .35	42.6 2.0
Dec. 4.7	55.52 .36	25.9 1.5	54.10 .34	12.7 1.9	35.52 .67	2.3 0.8	18.55 .35	40.7 1.9
14.7	55.88 +.35	24.5 −1.3	54.44 +.33	10.8 −1.8	36.19 +.66	1.8 −0.2	18.91 +.35	38.9 −1.7
24.7	56.22 .33	23.3 1.0	54.77 .32	9.0 1.7	36.83 .62	1.8 +0.3	19.25 .33	37.3 1.5
34.6	56.53 +.29	22.4 −0.7	55.06 +.29	7.4 −1.5	37.43 +.57	2.4 +0.8	19.57 +.30	36.0 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		9 Draconis. (H.)		*ρ* Leonis.		*η* Argûs.		*l* Leonis.	
		Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
		h m 10 26	° ′ +76 14	h m 10 27	° ′ + 9 50	h m 10 41	° ′ −59 8	h m 10 43	° ′ +11 5
		s	″	s	″	s	″	s	″
Jan.	0.7	21.63+ .98	38.2 +0.8	21.45 +.31	26.0 −1.8	2.28 +.46	1.5 −2.9	48.71 +.32	38.5 −1.7
	10.6	22.56 .87	39.3 1.4	21.75 .28	24.3 1.6	2.71 .40	4.6 3.3	49.02 .29	36.8 1.6
	20.6	23.38 .74	40.9 1.9	22.01 .24	22.9 1.3	3.08 .33	8.1 3.6	49.29 .25	35.4 1.3
	30.6	24.04 .58	43.0 2.3	22.23 .19	21.7 1.1	3.38 .26	11.8 3.7	49.52 .21	34.2 1.0
Feb.	9.6	24.54 .41	45.5 2.6	22.40 .15	20.7 0.8	3.60 .18	15.5 3.8	49.71 .16	33.3 0.7
	19.5	24.86+ .23	48.2 +2.8	22.52 +.11	20.1 −0.5	3.74 +.10	19.3 −3.8	49.85 +.11	32.7 −0.4
	29.5	24.99+ .04	51.1 2.9	22.60 .05	19.7 −0.2	3.80 +.03	23.1 3.7	49.94 .07	32.4 −0.2
Mar.	10.5	24.94− .14	54.0 2.9	22.62 +.01	19.6 0.0	3.80 −.04	26.7 3.5	49.99 +.02	32.3 0.0
	20.4	24.71 .30	56.8 2.7	22.61 −.03	19.7 +0.2	3.72 .11	30.1 3.2	49.99 −.01	32.5 +0.2
	30.4	24.33 .45	59.4 2.4	22.57 .06	19.9 0.3	3.58 .16	33.2 2.9	49.96 .05	32.8 0.4
Apr.	9.4	23.82− .57	61.7 +2.1	22.49 −.08	20.3 +0.4	3.39 −.21	35.9 −2.5	49.90 −.07	33.3 +0.5
	19.4	23.20 .66	63.6 1.6	22.40 .10	20.8 0.5	3.16 .25	38.2 2.1	49.82 .09	33.8 0.6
	29.3	22.50 .72	65.0 1.1	22.29 .11	21.3 0.5	2.90 .28	40.2 1.7	49.72 .10	34.4 0.6
May	9.3	21.75 .75	65.9 0.7	22.18 .11	21.8 0.5	2.61 .30	41.6 1.2	49.61 .11	35.0 0.6
	19.3	20.99 .76	66.3 +0.1	22.07 .11	22.4 0.5	2.31 .31	42.6 0.7	49.50 .11	35.6 0.6
	29.3	20.23− .74	66.1 −0.5	21.96 −.10	22.9 +0.5	2.00 −.31	43.1 −0.2	49.39 −.10	36.2 +0.6
June	8.2	19.51 .69	65.3 1.0	21.86 .09	23.4 0.5	1.69 .30	43.1 +0.3	49.30 .09	36.7 0.5
	18.2	18.85 .63	64.1 1.5	21.78 .08	23.8 0.4	1.39 .29	42.5 0.8	49.21 .08	37.2 0.4
	28.2	18.26 .54	62.3 1.9	21.71 .06	24.2 0.4	1.11 .27	41.5 1.2	49.13 .07	37.5 0.3
July	8.1	17.76 .45	60.2 2.4	21.66 .04	24.5 0.3	0.85 .24	40.1 1.7	49.07 .05	37.8 0.2
	18.1	17.36− .34	57.6 −2.7	21.62 −.02	24.8 +0.2	0.63 −.20	38.2 +2.0	49.03 .03	38.0 +0.1
	28.1	17.08 .22	54.7 3.0	21.61 .00	24.9 +0.1	0.45 .16	36.0 2.3	49.00 .01	38.1 0.0
Aug.	7.1	16.92− .10	51.5 3.3	21.62 +.02	24.9 −0.1	0.31 .11	33.5 2.6	49.00 +.01	37.9 0.2
	17.0	16.87+ .02	48.2 3.4	21.66 .05	24.7 0.2	0.24 −.04	30.9 2.7	49.02 .03	37.7 0.3
	27.0	16.96 .15	44.7 3.5	21.72 .08	24.4 0.4	0.22 +.02	28.1 2.8	49.06 .06	37.3 0.5
Sept.	6.0	17.18+ .28	41.1 −3.6	21.81 +.11	23.9 −0.6	0.27 +.09	25.4 +2.7	49.14 +.09	36.7 0.7
	16.0	17.52 .41	37.5 3.6	21.94 .14	23.2 0.8	0.40 .16	22.7 2.5	49.24 .12	35.9 0.9
	25.9	18.00 .54	33.9 3.5	22.09 .17	22.2 1.1	0.60 .24	20.3 2.2	49.38 .16	34.8 1.1
Oct.	5.9	18.60 .66	30.6 3.3	22.28 .21	21.1 1.3	0.88 .31	18.2 1.9	49.56 .19	33.6 1.4
	15.9	19.32 .77	27.4 3.0	22.51 .24	19.7 1.5	1.22 .38	16.5 1.4	49.77 .23	32.1 1.6
	25.8	20.14+ .87	24.5 −2.7	22.76 +.27	18.1 −1.7	1.63 +.44	15.4 +0.9	50.02 +.26	30.4 −1.8
Nov	4.8	21.06 .96	22.0 2.3	23.05 .30	16.3 1.9	2.09 .48	14.8 +0.3	50.29 .29	28.6 1.9
	14.8	22.06 1.03	19.9 1.8	23.36 .32	14.4 2.0	2.59 .51	14.8 −0.3	50.60 .32	26.6 2.0
	24.8	23.12 1.07	18.3 1.3	23.69 .33	12.3 2.0	3.12 .53	15.5 1.0	50.93 .33	24.5 2.1
Dec.	4.7	24.20 1.08	17.3 0.8	24.03 .34	10.3 2.0	3.66 .54	16.7 1.6	51.27 .34	22.4 2.1
	14.7	25.29+1.07	16.8 −0.2	24.37 +.34	8.2 −2.0	4.19 +.52	18.6 −2.1	51.61 +.34	20.3 −2.0
	24.7	26.34 1.08	16.9 +0.3	24.71 .32	6.3 1.9	4.70 .48	21.0 2.6	51.95 .32	18.3 1.9
	34.6	27.32+ .94	17.5 +0.9	25.01 +.30	4.5 −1.7	5.16 +.44	23.9 −3.0	52.27 +.31	16.5 1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Ursæ Majoris.		*δ* Leonis.		*δ* Crateris.		*τ* Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declin *Nor*
	h m 10 57	° ′ +62 18	h m 11 8	° ′ +21 5	h m 11 14	° ′ −14 12	h m 11 22	+
	s	″	s	″	s	″	s	″
Jan. 0.7	21.37 +.58	27.1 −0.1	35.90 +.34	27.1 −1.5	9.28 +.33	55.4 −2.4	36.25 +.33	39.9
10.7	21.92 .53	27.3 +0.5	36.23 .32	25.6 1.3	9.60 .30	57.9 2.5	36.57 .31	37.9
20.6	22.43 .47	28.1 1.0	36.54 .28	24.5 0.9	9.89 .27	60.4 2.4	36.86 .27	36.0
30.6	22.86 .39	29.4 1.5	36.80 .24	23.8 0.6	10.13 .23	62.8 2.3	37.12 .24	34.4
Feb. 9.6	23.21 .30	31.2 1.9	37.02 .19	23.4 −0.2	10.34 .19	65.0 2.2	37.34 .19	33.0
19.5	23.46 +.21	33.3 +2.3	37.19 +.15	23.3 +0.1	10.50 +.14	67.1 −2.0	37.51 +.15	31.9
29.5	23.63 .11	35.7 2.5	37.31 .10	23.6 0.4	10.62 .09	69.0 1.7	37.64 .11	31.0
Mar. 10.5	23.69 +.02	38.2 2.6	37.38 .05	24.1 0.6	10.69 .05	70.6 1.5	37.72 .06	30.5
20.5	23.66 −.07	40.8 2.6	37.41 +.01	24.8 0.8	10.72 +.01	72.0 1.3	37.76 +.02	30.2
30.4	23.55 .15	43.4 2.4	37.40 −.03	25.7 0.9	10.72 −.02	73.1 1.0	37.77 −.01	30.1
Apr. 9.4	23.37 −.21	45.7 +2.2	37.35 −.06	26.7 +1.0	10.68 −.05	73.9 −0.7	37.74 −.03	30.2
19.4	23.12 .27	47.8 1.9	37.28 .08	27.7 1.0	10.62 .07	74.6 0.5	37.69 .06	30.4
29.4	22.84 .30	49.6 1.6	37.19 .10	28.7 1.0	10.55 .08	75.0 0.3	37.63 .08	30.8
May 9.3	22.52 .33	50.9 1.1	37.09 .11	29.7 0.9	10.46 .09	75.1 −0.1	37.54 .09	31.3
19.3	22.18 .34	51.8 0.7	36.97 .11	30.5 0.8	10.36 .10	75.1 +0.1	37.45 .09	31.8
29.3	21.84 −.34	52.3 +0.2	36.86 −.11	31.2 +0.6	10.26 −.10	74.8 +0.3	37.36 −.09	32.3
June 8.3	21.51 .32	52.2 −0.3	36.75 .11	31.8 0.5	10.15 .10	74.4 0.5	37.26 .09	32.9
18.2	21.20 .30	51.7 0.8	36.65 .10	32.2 0.3	10.05 .10	73.8 0.7	37.17 .09	33.5
28.2	20.92 .27	50.7 1.2	36.55 .09	32.4 +0.1	9.96 .09	73.0 0.8	37.08 .08	34.0
July 8.2	20.67 .23	49.2 1.6	36.47 .07	32.4 −0.1	9.87 .08	72.1 0.9	37.00 .07	34.6
18.1	20.46 −.18	47.4 −2.0	36.40 −.06	32.2 −0.3	9.80 −.07	71.2 +1.0	36.94 −.06	35.0
28.1	20.30 .13	45.2 2.4	36.36 .04	31.8 0.5	9.74 .05	70.1 1.1	36.88 .04	35.4
Aug. 7.1	20.19 .08	42.6 2.7	36.33 −.02	31.2 0.7	9.71 −.03	69.0 1.1	36.85 −.02	35.7
17.1	20.14 −.02	39.8 2.9	36.33 +.01	30.4 0.9	9.70 .00	68.0 1.0	36.83 .00	35.8
27.0	20.15 +.04	36.7 3.1	36.35 .04	29.4 1.1	9.70 +.02	67.0 0.9	36.84 +.02	35.8
Sept. 6.0	20.21 +.10	33.5 −3.3	36.40 +.07	28.2 −1.3	9.74 +.06	66.1 +0.8	36.87 +.05	35.7
16.0	20.35 .17	30.2 3.4	36.48 .10	26.8 1.5	9.81 .09	65.5 0.6	36.94 .08	35.3
26.0	20.55 .24	26.8 3.4	36.60 .14	25.2 1.7	9.92 .13	65.0 +0.3	37.04 .12	34.7
Oct. 5.9	20.82 .30	23.4 3.3	36.76 .18	23.3 1.9	10.06 .17	64.9 0.0	37.18 .16	33.8
15.9	21.16 .37	20.1 3.2	36.95 .21	21.3 2.1	10.25 .21	65.0 −0.3	37.35 .20	32.7
25.9	21.56 +.43	17.0 −3.0	37.18 +.25	19.2 −2.2	10.48 +.25	65.5 −0.7	37.57 +.23	31.3
Nov. 4.8	22.03 .49	14.1 2.7	37.46 .29	16.9 2.3	10.74 .28	66.4 1.1	37.82 .27	29.7
14.8	22.55 .54	11.5 2.4	37.76 .32	14.6 2.3	11.04 .31	67.7 1.4	38.10 .30	27.8
24.8	23.11 .58	9.3 1.9	38.09 .34	12.4 2.3	11.36 .33	69.2 1.7	38.41 .32	25.8
Dec. 4.8	23.70 .60	7.6 1.5	38.43 .35	10.1 2.2	11.70 .34	71.1 2.0	38.74 .33	23.7
14.7	24.30 +.60	6.3 −1.0	38.79 +.36	8.0 −2.0	12.04 +.34	73.3 −2.2	39.08 +.34	21.5
24.7	24.90 .59	5.6 −0.4	39.15 .35	6.2 1.8	12.39 .34	75.6 2.4	39.42 .33	19.3
34.7	25.48 +.58	5.5 +0.1	39.49 +.34	4.5 −1.5	12.72 +.32	78.0 −2.5	39.75 +.32	17.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		λ Draconis.		ν Leonis.		β Leonis.		γ Ursæ Majoris.	
		Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
		h m 11 25	° ′ +69 53	h m 11 31	° ′ − 0 15	h m 11 43	° ′ +15 8	h m 11 48	° ′ +54 15
		s	″	s	″	s	″	s	″
Jan.	0.7	16.89 +.76	57.8 − 0.2	38.26 +.33	2.1 −2.2	46.24 +.34	63.2 − 1.9	23.44 +.50	62.8 −1.0
	10.7	17.63 .71	57.9 +0.4	38.59 .31	4.2 2.1	46.57 .32	61.4 1.7	23.93 .47	62.1 0.4
	20.7	18.31 .64	58.6 1.0	38.88 .28	6.2 1.9	46.88 .29	59.9 1.4	24.39 .44	62.0 +0.2
	30.6	18.91 .55	59.9 1.6	39.15 .24	8.1 1.7	47.16 .26	58.7 1.0	24.80 .38	62.6 0.8
Feb.	9.6	19.41 .45	61.8 2.0	39.37 .20	9.6 1.5	47.41 .22	57.8 0.7	25.16 .32	63.6 1.3
	19.6	19.80 +.33	64.0 +2.4	39.55 +.16	11.0 −1.2	47.60 +.18	57.4 −0.3	25.45 +.26	65.1 +1.7
	29.5	20.07 .20	66.5 2.7	39.68 .11	12.0 0.9	47.75 .13	57.2 0.0	25.67 .18	66.9 2.0
Mar.	10.5	20.21 +.08	69.3 2.8	39.78 .07	12.8 0.7	47.86 .08	57.3 +0.3	25.81 .11	69.1 2.3
	20.5	20.22 −.04	72.1 2.8	39.83 +.03	13.4 0.4	47.93 .04	57.7 0.5	25.88 +.04	71.5 2.4
	30.5	20.12 .16	74.9 2.7	39.84 .00	13.7 −0.2	47.95 +.01	58.3 0.7	25.89 −.03	74.0 2.5
Apr.	9.4	19.91 −.26	77.6 +2.5	39.83 −.03	13.8 0.0	47.94 −.02	59.1 +0.8	25.83 −.09	76.4 +2.4
	19.4	19.61 .34	80.0 2.2	39.79 .05	13.7 +0.1	47.90 .05	60.0 0.9	25.71 .14	78.8 2.2
	29.4	19.23 .40	82.1 1.8	39.72 .07	13.5 0.3	47.84 .07	60.9 0.9	25.55 .18	80.9 2.0
May	9.3	18.80 .45	83.7 1.4	39.65 .08	13.2 0.4	47.76 .09	61.8 0.9	25.36 .21	82.7 1.7
	19.3	18.33 .48	84.9 0.9	39.56 .09	12.7 0.5	47.67 .09	62.7 0.8	25.14 .23	84.2 1.3
	29.3	17.83 −.49	85.6 +0.4	39.47 −.09	12.2 +0.5	47.57 .10	63.5 +0.8	24.90 −.24	85.3 +0.9
June	8.3	17.34 .49	85.7 −0.1	39.38 .09	11.7 0.6	47.47 .10	64.2 0.7	24.65 .24	86.0 +0.4
	18.2	16.85 .47	85.4 0.6	39.28 .09	11.1 0.6	47.37 .10	64.8 0.5	24.41 .24	86.2 0.0
	28.2	16.40 .44	84.5 1.1	39.20 .09	10.5 0.6	47.27 .09	65.2 0.3	24.17 .23	86.0 0.5
July	8.2	15.97 .40	83.1 1.6	39.11 .08	9.9 0.6	47.18 .09	65.5 +0.2	23.95 .21	85.3 0.9
	18.2	15.60 −.35	81.3 −2.1	39.04 −.07	9.4 +0.5	47.10 −.08	65.6 0.0	23.75 .19	84.1 −1.3
	28.1	15.28 .29	79.0 2.5	38.98 .05	8.8 0.5	47.03 .06	65.6 −0.1	23.58 .16	82.6 1.7
Aug.	7.1	15.03 .22	76.4 2.8	38.94 .03	8.4 0.4	46.97 .04	65.3 0.3	23.43 .13	80.7 2.1
	17.1	14.85 .14	73.4 3.1	38.91 −.01	8.1 0.3	46.94 .02	64.9 0.5	23.32 .09	78.4 2.4
	27.0	14.75 −.06	70.1 3.3	38.91 +.01	7.9 +0.1	46.92 .00	64.2 0.8	23.25 −.05	75.9 2.7
Sept.	6.0	14.73 +.03	66.7 −3.5	38.94 +.04	7.8 −0.1	46.93 +.03	63.3 1.0	23.22 .00	73.0 −3.0
	16.0	14.80 .11	63.1 3.6	38.99 .07	8.0 0.3	46.98 .06	62.3 1.2	23.25 +.05	69.9 3.2
	26.0	14.96 .21	59.5 3.7	39.09 .11	8.4 0.5	47.06 .10	60.9 1.4	23.32 .11	66.7 3.3
Oct.	5.9	15.21 .30	55.8 3.6	39.21 .15	9.0 0.8	47.17 .14	59.4 1.7	23.46 .17	63.3 3.4
	15.9	15.56 .40	52.2 3.5	39.38 .19	10.0 1.1	47.33 .18	57.6 1.9	23.65 .23	60.0 3.4
	25.9	16.01 +.49	48.8 −3.3	39.59 +.23	11.2 −1.3	47.52 +.22	55.7 2.0	23.91 +.29	56.6 −3.3
Nov.	4.9	16.54 .57	45.6 3.0	39.83 .26	12.6 1.6	47.76 .25	53.6 2.2	24.23 .34	53.3 3.2
	14.8	17.15 .64	42.8 2.7	40.11 .30	14.3 1.8	48.03 .29	51.3 2.3	24.60 .39	50.3 2.9
	24.8	17.83 .70	40.3 2.2	40.42 .32	16.2 2.0	48.33 .32	49.0 2.3	25.02 .43	47.5 2.6
Dec.	4.8	18.55 .74	38.3 1.7	40.74 .33	18.3 2.1	48.06 .34	46.7 2.3	25.48 .47	45.0 2.2
	14.8	19.31 +.77	36.9 −1.2	41.08 +.34	20.5 2.2	49.00 +.35	44.4 − 2.2	25.96 +.49	43.0 −1.5
	24.7	20.08 .76	36.0 −0.6	41.42 .34	22.7 2.2	49.35 .35	42.3 2.0	26.46 .50	41.4 1.3
	34.7	20.84 +.75	35.8 0.0	41.75 +.32	25.0 − 2.2	49.69 +.34	40.3 1.8	26.95 +.49	40.4 0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*o* Virginis.		4 Draconis (H.)		γ Corvi.		β Chamæleontis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	11 59	+ 9 18	12 7	+78 10	12 10	−16 57	12 12	−78 43
	s	″	s	″	s	″	s	″
Jan. 0.7	55.45 +.34	30.4 −2.1	23.92+1.20	75.6 −0.5	27.91 +.35	51.1 −2.3	13.38+1.24	48.1 −1.4
10.7	55.78 .32	28.4 1.9	25.10 1.16	75.4 +0.1	28.25 .33	53.4 2.4	14.60 1.17	49.9 2.1
20.7	56.09 .30	26.7 1.6	26.23 1.09	75.9 0.8	28.57 .31	55.8 2.4	15.73 1.07	52.3 2.6
30.6	56.38 .27	25.2 1.3	27.27 .98	77.0 1.4	28.87 .28	58.2 2.3	16.74 .95	55.2 3.0
Feb. 9.6	56.63 .23	24.1 1.0	28.18 .83	78.6 1.9	29.13 .24	60.5 2.2	17.62 .80	58.4 3.4
19.6	56.84 +.19	23.2 −0.7	28.93+ .66	80.8 +2.4	29.34 +.20	62.6 −2.1	18.35+ .64	61.9 −3.6
29.6	57.00 .14	22.7 0.4	29.50 .47	83.3 2.7	29.52 .15	64.6 1.9	18.90 .47	65.6 3.8
Mar. 10.5	57.12 .10	22.5 −0.1	29.87 .27	86.2 2.9	29.65 .11	66.4 1.7	19.29 .30	69.5 3.9
20.5	57.20 .06	22.5 +0.2	30.04+ .07	89.1 3.1	29.74 .07	67.9 1.4	19.51+ .13	73.4 3.9
30.5	57.24 +.03	22.8 0.4	30.01− .13	92.2 3.0	29.80 .04	69.2 1.2	19.55− .03	77.2 3.8
Apr. 9.5	57.25 −.01	23.3 +0.5	29.78− .32	95.1 +2.8	29.82 +.01	70.3 −1.0	19.44− .19	80.9 −3.6
19.4	57.23 .03	23.9 0.7	29.37 .48	97.9 2.6	29.82 −.02	71.1 0.7	19.17 .34	84.5 3.4
29.4	57.19 .05	24.6 0.7	28.81 .62	100.3 2.3	29.78 .04	71.7 0.5	18.76 .48	87.7 3.1
May 9.4	57.13 .07	25.3 0.8	28.12 .74	102.4 1.8	29.73 .06	72.2 0.3	18.22 .60	90.6 2.7
19.3	57.05 .08	26.1 0.8	27.33 .83	104.0 1.3	29.66 .07	72.3 −0.1	17.57 .70	93.1 2.3
29.3	56.96 −.09	26.8 +0.7	26.47− .88	105.1 +0.8	29.58 −.08	72.3 +0.1	16.81− .79	95.1 −1.8
June 8.3	56.87 .09	27.5 0.7	25.57 .91	105.6 +0.3	29.49 .09	72.1 0.3	15.98 .86	96.7 1.3
18.3	56.78 .09	28.2 0.6	24.64 .92	105.6 −0.3	29.40 .10	71.7 0.5	15.09 .91	97.7 0.8
28.2	56.68 .09	28.7 0.5	23.73 .90	105.1 0.8	29.30 .10	71.2 0.6	14.17 .93	98.2 −0.2
July 8.2	56.59 .09	29.2 0.4	22.85 .85	104.0 1.4	29.20 .10	70.5 0.7	13.23 .92	98.1 +0.3
18.2	56.51 −.08	29.5 +0.3	22.03− .79	102.4 −1.8	29.10 −.09	69.7 +0.8	12.32− .89	97.5 +0.9
28.2	56.43 .07	29.7 +0.1	21.27 .71	100.3 2.3	29.01 .08	68.8 0.9	11.46 .82	96.4 1.4
Aug. 7.1	56.37 .06	29.7 −0.1	20.61 .61	97.8 2.7	28.93 .07	67.8 1.0	10.67 .73	94.7 1.9
17.1	56.32 .04	29.6 0.2	20.06 .49	94.9 3.1	28.87 .05	66.8 1.0	10.00 .61	92.6 2.3
27.1	56.29 −.02	29.3 0.4	19.63 .37	91.6 3.4	28.82 −.03	65.8 1.0	9.46 .46	90.2 2.6
Sept. 6.0	56.29 +.01	28.8 −0.6	19.33− .23	88.2 −3.6	28.81 .00	64.9 +0.9	9.08− .28	87.4 +2.8
16.0	56.32 .04	28.0 0.9	19.17− .08	84.5 3.8	28.82 +.03	64.1 0.7	8.89− .09	84.5 2.9
26.0	56.38 .08	27.0 1.1	19.16+ .07	80.6 3.9	28.88 .07	63.5 0.5	8.90+ .11	81.5 3.0
Oct. 6.0	56.48 .12	25.8 1.3	19.32 .24	76.8 3.9	28.97 .11	63.1 +0.2	9.12 .32	78.6 2.8
15.9	56.62 .16	24.4 1.6	19.64 .40	72.9 3.8	29.10 .16	63.0 −0.1	9.55 .53	75.8 2.6
25.9	56.80 +.20	22.7 −1.8	20.11+ .56	69.2 −3.6	29.28 +.20	63.2 −0.4	10.18+ .73	73.3 +2.3
Nov. 4.9	57.02 .24	20.8 2.0	20.75 .72	65.7 3.4	29.51 .24	63.8 0.7	11.00 .90	71.2 1.9
14.8	57.28 .28	18.8 2.1	21.54 .86	62.5 3.0	29.77 .28	64.7 1.1	11.99 1.05	69.6 1.3
24.8	57.57 .31	16.6 2.2	22.47 .98	59.6 2.6	30.07 .31	66.0 1.4	13.11 1.17	68.5 0.8
Dec. 4.8	57.89 .33	14.3 2.3	23.51 1.08	57.3 2.1	30.40 .34	67.6 1.7	14.32 1.24	68.1 +0.1
14.8	58.22 +.34	12.0 −2.2	24.63+1.15	55.4 −1.6	30.75 +.35	69.4 −2.0	15.59+1.28	68.3 −0.5
24.7	58.56 .34	9.8 2.1	25.80 1.18	54.2 0.9	31.10 .35	71.5 2.2	16.88 1.27	69.1 1.1
34.7	58.91 +.33	7.8 −2.0	26.99+1.20	53.6 −0.3	31.45 +.34	73.8 −2.3	18.14+1.23	70.5 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Virginis.		α^1 Crucis.		β Corvi.		κ Draconis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 12 14	° ′ − 0 5	h m 12 20	° ′ −62 31	h m 12 28	° ′ −22 49	h m 12 29	° ′ +70 20
	s	″	s	″	s	″	s	″
Jan. 0.7	35.70 +.34	25.0 −2.2	48.51 +.60	8.0 −1.7	55.70 +.36	15.4 −2.2	4.78 +.77	77.6 −1.1
10.7	36.03 .33	27.2 2.1	49.10 .57	10.0 2.2	56.06 .35	17.6 2.3	5.54 .75	76.9 −0.4
20.7	36.35 .30	29.2 1.9	49.66 .53	12.5 2.7	56.40 .33	20.0 2.4	6.28 .72	76.8 +0.3
30.7	36.64 .27	31.1 1.7	50.16 .47	15.4 3.0	56.71 .30	22.5 2.4	6.98 .66	77.4 0.9
Feb. 9.6	36.90 .24	32.7 1.5	50.60 .41	18.6 3.3	56.99 .26	24.9 2.4	7.60 .58	78.6 1.5
19.6	37.11 +.20	34.0 −1.2	50.98 +.34	22.0 −3.5	57.23 +.22	27.2 −2.3	8.14 +.48	80.3 +2.0
29.6	37.29 .16	35.1 0.9	51.28 .26	25.5 3.6	57.42 .18	29.5 2.2	8.56 .37	82.6 2.4
Mar. 10.5	37.43 .12	35.9 0.7	51.50 .19	29.1 3.6	57.58 .14	31.5 2.0	8.87 .24	85.1 2.7
20.5	37.52 .08	36.4 0.4	51.65 .11	32.7 3.5	57.70 .10	33.4 1.8	9.05 +.12	87.9 2.9
30.5	37.58 .04	36.7 −0.2	51.73 +.04	36.2 3.4	57.78 .06	35.0 1.5	9.12 .00	90.9 2.9
Apr. 9.5	37.61 +.01	36.8 0.0	51.74 −.02	39.5 −3.2	57.82 +.03	36.5 −1.3	9.06 −.11	93.8 +2.9
19.4	37.60 −.02	36.7 +0.2	51.68 .08	42.5 2.9	57.83 .00	37.6 1.1	8.90 .21	96.6 2.7
29.4	37.57 .04	36.4 0.3	51.57 .14	45.3 2.6	57.81 −.03	38.6 0.8	8.63 .30	99.2 2.4
May 9.4	37.53 .05	36.0 0.4	51.41 .19	47.8 2.3	57.78 .05	39.3 0.6	8.29 .38	101.5 2.1
19.4	37.47 .07	35.5 0.5	51.20 .23	49.9 1.9	57.72 .07	39.8 0.4	7.88 .44	103.5 1.7
29.3	37.39 −.08	35.0 +0.5	50.95 −.26	51.5 −1.4	57.64 −.08	40.0 −0.1	7.42 −.49	104.9 +1.2
June 8.3	37.31 .09	34.4 0.6	50.67 .29	52.7 1.0	57.56 .09	40.0 +0.1	6.92 .51	105.9 0.7
18.3	37.22 .09	33.8 0.6	50.36 .31	53.4 −0.5	57.46 .10	39.8 0.3	6.41 .52	106.3 +0.2
28.2	37.13 .09	33.3 0.6	50.04 .32	53.6 0.0	57.35 .11	39.5 0.5	5.88 .52	106.2 −0.3
July 8.2	37.04 .09	32.7 0.6	49.71 .33	53.4 +0.5	57.24 .11	38.9 0.7	5.37 .50	105.6 0.9
18.2	36.95 −.09	32.1 +0.5	49.39 −.32	52.6 +1.0	57.14 −.11	38.1 +0.9	4.88 −.48	104.5 −1.4
28.2	36.86 .08	31.7 0.4	49.08 .30	51.4 1.4	57.03 .10	37.1 1.0	4.42 .44	102.9 1.9
Aug. 7.1	36.79 .06	31.3 0.4	48.79 .27	49.8 1.8	56.93 .09	36.1 1.1	4.00 .39	100.8 2.3
17.1	36.74 .05	30.9 0.2	48.55 .22	47.8 2.1	56.85 .07	34.9 1.2	3.64 .33	98.3 2.7
27.1	36.70 −.03	30.8 +0.1	48.35 .16	45.5 2.4	56.79 .05	33.8 1.2	3.34 .26	95.4 3.0
Sept. 6.1	36.68 .00	30.7 −0.1	48.22 −.09	43.0 +2.6	56.75 −.02	32.6 +1.1	3.12 −.18	92.2 −3.3
16.0	36.69 +.03	30.9 0.3	48.16 −.02	40.3 2.7	56.74 +.01	31.5 1.0	2.98 −.10	88.7 3.6
26.0	36.74 .07	31.3 0.5	48.18 +.07	37.7 2.6	56.78 .05	30.6 0.8	2.93 .00	85.1 3.7
Oct. 6.0	36.83 .11	32.0 0.8	48.29 .16	35.1 2.5	56.85 .10	29.9 0.6	2.98 +.10	81.3 3.8
15.9	36.95 .15	32.9 1.0	48.50 .25	32.7 2.2	56.97 .15	29.4 +0.3	3.13 .20	77.5 3.8
25.9	37.12 +.19	34.0 −1.3	48.79 +.34	30.7 +1.9	57.14 +.19	29.2 0.0	3.38 +.31	73.7 3.7
Nov. 4.9	37.33 .23	35.5 1.5	49.17 .42	29.0 1.4	57.36 .24	29.4 −0.4	3.74 .41	70.0 3.5
14.9	37.58 .27	37.1 1.8	49.63 .49	27.8 0.9	57.62 .28	29.9 0.7	4.20 .51	66.6 3.3
24.8	37.87 .30	39.0 2.0	50.15 .55	27.2 +0.4	57.92 .31	30.8 1.1	4.76 .59	63.4 2.9
Dec. 4.8	38.18 .32	41.1 2.1	50.72 .59	27.1 −0.2	58.25 .34	32.1 1.5	5.39 .67	60.7 2.5
14.8	38.51 +.34	43.3 −2.2	51.33 +.60	27.7 −0.8	58.60 +.36	33.8 1.8	6.09 +.72	58.5 2.0
24.8	38.85 .34	45.5 2.2	51.94 .60	28.8 1.4	58.96 .36	35.7 2.0	6.83 .75	56.8 1.4
34.7	39.19 +.34	47.7 2.2	52.54 +.60	30.5 −1.9	59.33 +.36	37.8 −2.2	7.60 +.76	55.7 0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	32^2 Camelop. (H.)		α Can. Venaticorum.		θ Virginis.		α Virginis. (*Spica.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declin *Sou*
	h m 12 48	° ′ +83 57	h m 12 51	° ′ +38 52	h m 13 4	° ′ − 4 59	h m 13 19	° −10
	s	″	s	″	s	″	s	″
Jan. 0.8	26.26+2.17	76.3 −0.9	10.58 +.40	29.4 −1.9	34.11 +.34	6.5 −2.2	42.91 +.34	9.9
10.7	28.44 2.16	75.7 −0.2	10.98 .39	27.7 1.4	34.45 .34	8.6 2.1	43.26 .34	12.0
20.7	30.59 2.10	75.7 +0.4	11.36 .37	26.5 0.9	34.79 .32	10.7 2.0	43.60 .33	14.0
30.7	32.65 1.97	76.4 1.0	11.73 .35	25.8 −0.4	35.10 .30	12.7 1.9	43.92 .31	16.1
Feb. 9.6	34.53 1.76	77.7 1.6	12.06 .31	25.7 +0.1	35.39 .27	14.4 1.7	44.22 .28	18.0
19.6	36.16+1.48	79.6 +2.1	12.36 +.27	26.1 +0.6	35.65 +.24	16.0 −1.4	44.49 +.25	19.7
29.6	37.49 1.16	82.0 2.5	12.60 .22	27.0 1.1	35.87 .20	17.3 1.2	44.73 .22	21.3
Mar. 10.6	38.47 .79	84.7 2.8	12.80 .17	28.3 1.5	36.05 .17	18.4 0.9	44.93 .19	22.6
20.5	39.07 .41	87.6 3.0	12.94 .12	29.9 1.8	36.20 .13	19.2 0.7	45.09 .15	23.7
30.5	39.29+ .02	90.7 3.1	13.04 .07	31.8 2.0	36.31 .09	19.7 0.4	45.22 .11	24.5
Apr. 9.5	39.12− .36	93.8 +3.0	13.09 +.03	33.9 +2.1	36.38 +.06	20.0 −0.2	45.31 +.08	25.2
19.5	38.58 .72	96.7 2.8	13.09 −.02	36.0 2.1	36.43 .03	20.2 0.0	45.38 .05	25.7
29.4	37.69 1.04	99.4 2.6	13.05 .05	38.1 2.1	36.45 +.01	20.1 +0.1	45.41 +.02	25.9
May 9.4	36.50 1.32	101.8 2.2	12.99 .08	40.1 1.9	36.45 −.02	19.9 0.3	45.42 .00	26.0
19.4	35.05 1.55	103.8 1.7	12.89 .11	42.0 1.7	36.42 .04	19.6 0.4	45.41 −.02	26.0
29.4	33.39−1.73	105.3 +1.3	12.77 −.13	43.6 +1.5	36.38 −.05	19.2 +0.5	45.38 −.04	25.8
June 8.3	31.58 1.86	106.3 0.7	12.63 .14	44.9 1.2	36.31 .07	18.7 0.5	45.32 .06	25.5
18.3	29.68 1.93	106.8 +0.2	12.48 .15	45.9 0.8	36.24 .08	18.2 0.5	45.25 .07	25.1
28.2	27.72 1.95	106.7 −0.4	12.33 .16	46.6 0.5	36.15 .09	17.6 0.6	45.17 .09	24.7
July 8.2	25.77 1.92	106.0 0.9	12.17 .16	46.8 +0.1	36.06 .10	17.0 0.6	45.08 .10	24.1
18.2	23.88−1.85	104.8 −1.5	12.00 −.16	46.7 −0.3	35.96 −.10	16.5 +0.6	44.97 −.10	23.6
28.2	22.08 1.73	103.0 2.0	11.85 .15	46.2 0.7	35.86 .10	15.9 0.5	44.87 .11	22.9
Aug. 7.2	20.41 1.58	100.9 2.4	11.70 .14	45.4 1.0	35.76 .10	15.4 0.5	44.76 .10	22.3
17.1	18.91 1.39	98.2 2.8	11.57 .12	44.1 1.4	35.67 .09	14.9 0.4	44.66 .09	21.7
27.1	17.62 1.17	95.2 3.2	11.46 .10	42.5 1.8	35.59 .07	14.5 0.3	44.57 .08	21.1
Sept. 6.1	16.57− .92	91.9 −3.5	11.38 −.07	40.6 −2.1	35.53 −.05	14.3 +0.2	44.50 −.06	20.6
16.1	15.78 .65	88.3 3.7	11.33 −.03	38.4 2.4	35.50 −.02	14.2 0.0	44.45 −.03	20.3
26.0	15.27 .36	84.5 3.8	11.31 +.01	35.9 2.6	35.50 +.02	14.3 −0.2	44.43 .00	20.0
Oct. 6.0	15.06− .05	80.6 3.9	11.35 .06	33.1 2.9	35.53 .06	14.6 0.4	44.45 +.04	20.0
16.0	15.17+ .27	76.7 3.9	11.42 .11	30.2 3.0	35.61 .10	15.1 0.7	44.52 .09	20.2
25.9	15.61+ .60	72.8 −3.8	11.56 +.16	27.1 −3.1	35.73 +.15	15.9 −0.9	44.63 +.13	20.6
Nov. 4.9	16.37 .92	69.1 3.6	11.74 .21	23.9 3.2	35.90 .19	17.0 1.2	44.79 .18	21.3
14.9	17.45 1.23	65.6 3.3	11.98 .26	20.7 3.1	36.11 .23	18.4 1.5	44.99 .22	22.3
24.9	18.83 1.51	62.5 2.9	12.26 .31	17.6 3.0	36.37 .27	19.9 1.7	45.24 .26	23.6
Dec. 4.8	20.47 1.75	59.8 2.5	12.59 .34	14.7 2.8	36.65 .30	21.7 1.9	45.52 .30	25.1
14.8	22.34+1.95	57.5 −1.9	12.95 +.37	12.0 −2.5	36.97 +.33	23.7 −2.0	45.84 +.32	26.
24.8	24.37 2.08	55.9 1.3	13.33 .39	9.6 2.2	37.31 .34	25.8 2.1	46.17 .34	28.
34.8	26.51+2.17	54.9 −0.7	13.73 +.40	7.7 −1.8	37.65 +.34	27.9 −2.2	46.52 +.35	30.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		ζ Virginis.		η Ursæ Majoris.		η Bootis.		β Centauri.	
		Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.
		h m	° ′	h m	° ′	h m	° ′	h m	° ′
		13 29	− 0 3	13 43	+49 49	13 49	+18 54	13 56	−59 52
		s	″	s	″	s	″	s	″
Jan	0.8	23.75 +.34	58.1 −2.2	26.96 +.43	34.0 −2.2	44.12 +.34	54.7 −2.4	27.66 +.58	7.3 −0.5
	10.8	24.08 .34	60.3 2.1	27.40 .44	32.0 1.7	44.46 .34	52.5 2.1	28.24 .59	8.1 1.0
	20.7	24.42 .33	62.3 1.9	27.84 .44	30.6 1.1	44.80 .34	50.6 1.7	28.83 .58	9.3 1.5
	30.7	24.74 .31	64.1 1.7	28.27 .42	29.7 −0.5	45.14 .33	49.0 1.3	29.40 .56	11.1 1.9
Feb	9.7	25.04 .29	65.7 1.5	28.69 .40	29.5 +0.1	45.45 .31	47.9 0.9	29.95 .52	13.2 2.3
	19.7	25.31 +.26	67.1 −1.2	29.07 +.36	29.9 +0.7	45.75 +.28	47.2 −0.5	30.45 +.48	15.6 −2.6
	29.6	25.55 .22	68.1 0.9	29.40 .31	30.8 1.2	46.01 .24	46.9 −0.1	30.91 .43	18.3 2.8
Mar.	10.6	25.75 .19	68.9 0.6	29.69 .26	32.3 1.6	46.23 .21	47.0 +0.3	31.31 .37	21.2 2.9
	20.6	25.92 .15	69.4 0.4	29.92 .20	34.2 2.1	46.42 .17	47.5 0.7	31.65 .31	24.2 3.0
	30.5	26.06 .12	69.6 −0.1	30.09 .14	36.5 2.4	46.57 .13	48.3 1.0	31.94 .25	27.2 3.1
Apr.	9.5	26.16 +.08	69.6 +0.1	30.20 +.09	39.0 +2.6	46.69 +.10	49.4 +1.2	32.16 +.19	30.3 −3.0
	19.5	26.22 .05	69.4 0.3	30.26 +.03	41.6 2.7	46.77 .07	50.7 1.4	32.33 .13	33.3 2.9
	29.5	26.26 +.03	69.0 0.4	30.26 −.02	44.3 2.6	46.82 +.03	52.2 1.5	32.43 .07	36.1 2.8
May	9.4	26.28 .00	68.5 0.5	30.22 .07	46.9 2.5	46.84 .00	53.7 1.5	32.47 +.02	38.8 2.6
	19.4	26.27 −.01	67.9 0.6	30.13 .11	49.3 2.3	46.83 −.02	55.2 1.5	32.46 −.03	41.3 2.3
	29.4	26.24 −.04	67.3 +0.7	30.00 −.14	51.5 +2.0	46.80 −.04	56.7 +1.4	32.39 −.09	43.5 −2.1
June	8.4	26.19 .06	66.6 0.7	29.85 .17	53.4 1.7	46.74 .06	58.0 1.3	32.27 .14	45.4 1.8
	18.3	26.13 .07	65.9 0.7	29.66 .20	54.9 1.3	46.67 .08	59.2 1.1	32.11 .19	47.0 1.4
	28.3	26.05 .09	65.3 0.6	29.45 .22	56.0 0.9	46.58 .10	60.3 0.9	31.89 .23	48.1 0.9
July	8.3	25.95 .10	64.7 0.6	29.22 .23	56.7 +0.4	46.47 .11	61.1 0.7	31.65 .26	48.8 0.5
	18.2	25.85 −.10	64.1 +0.5	28.99 −.24	56.9 0.0	46.35 −.12	61.6 +0.4	31.37 −.29	49.1 −0.1
	28.2	25.74 .11	63.6 0.4	28.75 .24	56.7 −0.5	46.22 .13	62.0 +0.2	31.07 .30	49.0 +0.4
Aug.	7.2	25.64 .11	63.2 0.4	28.51 .23	56.0 0.9	46.09 .13	62.0 −0.1	30.77 .30	48.4 0.8
	17.2	25.53 .10	62.9 0.2	28.28 .22	54.8 1.4	45.97 .12	61.8 0.3	30.47 .29	47.3 1.2
	27.1	25.43 .09	62.7 +0.1	28.07 .20	53.2 1.8	45.85 .11	61.3 0.6	30.19 .26	45.9 1.6
Sept.	6.1	25.36 −.07	62.7 −0.1	27.88 −.17	51.3 −2.2	45.74 −.09	60.5 −0.9	29.95 −.22	44.1 +1.9
	16.1	25.30 .04	62.9 0.3	27.73 .13	48.9 2.6	45.66 .07	59.5 1.2	29.75 .17	42.0 2.2
	26.1	25.27 −.01	63.2 0.5	27.61 .09	46.1 2.9	45.60 −.04	58.2 1.5	29.61 .10	39.7 2.3
Oct.	6.0	25.28 +.03	63.8 0.7	27.55 −.04	43.1 3.2	45.58 .00	56.5 1.8	29.55 −.02	37.4 2.4
	16.0	25.33 .07	64.6 0.9	27.54 +.02	39.8 3.4	45.60 +.04	54.6 2.0	29.57 +.06	35.0 2.4
	26.0	25.43 +.12	65.7 −1.2	27.59 +.08	36.4 −3.5	45.67 +.09	52.5 2.2	29.68 +.15	32.6 +2.3
Nov	4.9	25.57 .16	67.0 1.4	27.70 .15	32.8 3.6	45.78 .14	50.2 2.4	29.88 .24	30.5 2.0
	14.9	25.76 .21	68.5 1.7	27.89 .21	29.2 3.6	45.94 .18	47.6 2.6	30.17 .33	28.6 1.7
	24.9	25.99 .25	70.3 1.9	28.13 .27	25.7 3.5	46.15 .23	45.0 2.6	30.54 .41	27.2 1.3
Dec.	4.9	26.26 .29	72.2 2.0	28.43 .33	22.3 3.2	46.40 .27	42.3 2.7	30.99 .48	26.1 0.8
	14.8	26.56 +.31	74.3 −2.1	28.79 +.38	19.2 −2.9	46.69 +.30	39.7 −2.6	31.49 +.53	25.5 +0.3
	24.8	26.88 .33	76.4 2.1	29.18 .41	16.4 2.5	47.01 .32	37.1 2.5	32.04 .57	25.5 −0.2
	34.8	27.22 +.34	78.6 −2.1	29.60 +.43	14.2 −2.1	47.34 +.34	34.8 −2.3	32.62 +.59	25.9 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Draconis.		*α* Bootis. (*Arcturus.*)		*θ* Bootis.		*ρ* Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	14 1	+64 51	14 10	+19 42	14 21	+52 19	14 27	+30 49
	s	″	s	″	s	″	s	″
Jan. 0.8	34.55 +.56	57.5 −2.3	55.07 +.33	71.4 −2.5	39.34 +.42	30.6 −2.6	20.86 +.34	22.6 −2.6
10.8	35.13 .59	55.6 1.7	55.40 .34	69.0 2.2	39.77 .44	28.2 2.1	21.20 .35	20.2 2.2
20.8	35.74 .60	54.2 1.0	55.74 .34	67.0 1.9	40.22 .45	26.4 1.5	21.56 .36	18.2 1.8
30.7	36.34 .59	53.5 −0.4	56.08 .33	65.3 1.5	40.67 .45	25.2 0.9	21.92 .35	16.6 1.4
Feb. 9.7	36.92 .57	53.4 +0.3	56.40 .31	64.1 1.0	41.11 .43	24.6 −0.3	22.26 .34	15.5 0.8
19.7	37.47 +.52	54.0 +0.9	56.70 +.29	63.3 −0.6	41.53 +.40	24.7 +0.4	22.59 +.32	15.0 −0.3
29.6	37.96 .46	55.3 1.5	56.97 .26	62.9 −0.2	41.91 .36	25.4 1.0	22.89 .29	15.0 +0.2
Mar. 10.6	38.38 .38	57.1 2.0	57.21 .22	62.9 +0.3	42.25 .31	26.6 1.5	23.16 .25	15.5 0.7
20.6	38.73 .30	59.3 2.4	57.42 .19	63.4 0.6	42.53 .26	28.4 2.0	23.39 .21	16.5 1.2
30.6	38.98 .21	61.9 2.7	57.59 .15	64.2 1.0	42.76 .20	30.6 2.4	23.59 .17	17.8 1.5
Apr. 9.5	39.15 +.12	64.8 +2.9	57.73 +.12	65.3 +1.2	42.93 +.14	33.1 +2.6	23.74 +.14	19.5 +1.8
19.5	39.23 +.04	67.8 3.0	57.83 .08	66.6 1.4	43.04 .08	35.8 2.8	23.86 .10	21.4 2.0
29.5	39.22 −.05	70.8 3.0	57.89 .05	68.1 1.5	43.10 +.03	38.6 2.8	23.94 .06	23.5 2.1
May 9.5	39.13 .13	73.7 2.8	57.93 +.02	69.7 1.6	43.10 −.03	41.4 2.8	23.98 +.03	25.7 2.2
19.4	38.97 .20	76.5 2.6	57.94 −.01	71.3 1.6	43.05 .08	44.2 2.6	23.99 −.01	27.9 2.1
29.4	38.74 −.26	78.9 +2.3	57.92 −.03	72.9 +1.5	42.95 −.12	46.7 +2.4	23.97 −.04	30.0 +2.0
June 8.4	38.45 .31	81.0 1.9	57.87 .06	74.3 1.4	42.80 .16	48.9 2.1	23.92 .07	31.9 1.8
18.3	38.11 .36	82.7 1.5	57.81 .08	75.6 1.2	42.62 .20	50.8 1.7	23.84 .09	33.6 1.6
28.3	37.73 .39	83.9 1.0	57.72 .10	76.7 1.0	42.41 .23	52.3 1.3	23.74 .11	35.1 1.3
July 8.3	37.33 .41	84.7 +0.5	57.61 .11	77.6 0.8	42.17 .25	53.4 0.9	23.61 .13	36.2 1.0
18.3	36.91 −.43	84.9 0.0	57.49 −.13	78.2 +0.5	41.91 −.27	54.1 +0.4	23.47 −.15	37.1 +0.7
28.2	36.47 .43	84.6 −0.6	57.36 .14	78.6 +0.3	41.64 .28	54.2 −0.1	23.31 .16	37.5 +0.3
Aug. 7.2	36.04 .42	83.7 1.1	57.22 .14	78.7 0.0	41.37 .28	53.9 0.6	23.14 .17	37.7 −0.1
17.2	35.62 .41	82.4 1.6	57.08 .14	78.6 −0.3	41.09 .27	53.1 1.0	22.97 .16	37.4 0.5
27.2	35.23 .38	80.6 2.0	56.94 .13	78.1 0.6	40.82 .26	51.8 1.5	22.81 .16	36.8 0.8
Sept. 6.1	34.87 −.34	78.3 −2.5	56.82 −.12	77.3 −0.9	40.57 −.24	50.1 −1.9	22.65 −.15	35.8 −1.2
16.1	34.56 .28	75.6 2.9	56.71 .09	76.3 1.2	40.35 .20	47.9 2.4	22.51 .12	34.4 1.5
26.1	34.31 .22	72.6 3.2	56.63 .06	74.9 1.5	40.17 .16	45.4 2.7	22.40 .09	32.7 1.9
Oct. 6.0	34.12 .15	69.3 3.5	56.59 −.03	73.3 1.8	40.03 .11	42.5 3.1	22.32 .06	30.7 2.2
16.0	34.02 −.06	65.7 3.7	56.58 +.02	71.4 2.0	39.95 −.05	39.3 3.3	22.29 −.01	28.3 2.5
26.0	34.00 +.03	61.9 −3.8	56.62 +.07	69.2 −2.3	39.93 +.01	35.9 −3.5	22.30 +.04	25.7 −2.7
Nov. 5.0	34.07 .12	58.1 3.8	56.71 .11	66.8 2.5	39.97 .08	32.3 3.6	22.36 .09	22.9 2.9
14.9	34.24 .21	54.3 3.8	56.85 .16	64.3 2.6	40.09 .15	28.6 3.7	22.48 .14	19.9 3.0
24.9	34.50 .31	50.5 3.6	57.03 .21	61.5 2.7	40.28 .22	24.9 3.6	22.65 .19	16.8 3.1
Dec. 4.9	34.85 .39	47.0 3.4	57.26 .25	58.8 2.8	40.53 .29	21.3 3.5	22.87 .24	13.7 3.1
14.9	35.29 +.47	43.8 −3.0	57.54 +.29	56.0 −2.7	40.85 +.34	18.0 −3.2	23.13 +.28	10.7 −2.9
24.8	35.79 .53	40.9 2.6	57.84 .31	53.4 2.6	41.22 .39	14.9 2.8	23.44 .32	7.8 2.7
34.8	36.34 +.58	38.6 −2.1	58.16 +.33	50.9 −2.4	41.63 +.42	12.3 −2.4	23.77 +.34	5.2 −2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	5 Ursæ Minoris.		α² Centauri (mean.)		ε Bootis.		α² Libræ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 14 27	° ′ +76 8	h m 14 32	° ′ −60 24	h m 14 40	° ′ +27 30	h m 14 45	° ′ −15 36
	s	″	s	″	s	″	s	″
Jan. 0.8	43.77 +.84	64.7 −2.3	30.71 +.56	14.0 0.0	26.59 +.32	28.7 - 2.6	7.06 +.33	38.6 1.5
10.8	44.66 .92	62.7 1.8	31.29 .58	14.3 −0.5	26.92 .34	26.2 2.3	7.39 .34	40.2 1.6
20.8	45.60 .96	61.2 1.1	31.88 .59	15.0 1.0	27.27 .35	24.1 1.9	7.74 .35	41.9 1.7
30.7	46.58 .97	60.4 −0.5	32.46 .58	16.2 1.4	27.62 .34	22.4 1.5	8.09 .34	43.6 1.7
Feb. 9.7	47.56 .95	60.2 +0.2	33.03 .55	17.8 1.8	27.96 .33	21.2 0.9	8.42 .33	45.2 1.6
19.7	48.49 +.90	60.8 +0.9	33.57 +.52	19.8 - 2.1	28.28 +.31	20.5 0.4	8.74 +.31	46.8 --1.5
29.7	49.35 .81	62.0 1.5	34.07 .48	22.0 2.4	28.58 .29	20.3 +0.1	9.04 .28	48.2 1.3
Mar. 10.6	50.10 .70	63.7 2.0	34.53 .43	24.5 2.6	28.85 .26	20.6 0.6	9.31 .26	49.4 1.2
20.6	50.74 .56	66.0 2.4	34.93 .38	27.2 2.7	29.09 .22	21.4 1.0	9.55 .23	50.5 1.0
30.6	51.23 .41	68.6 2.8	35.28 .32	29.9 2.8	29.30 .18	22.6 1.4	9.77 .20	51.4 0.8
Apr. 9.6	51.56 +.25	71.6 +3.0	35.56 +.26	32.8 −2.9	29.47 +.15	24.2 +1.7	9.95 +.17	52.2 - 0.6
19.5	51.73 +.09	74.7 3.1	35.79 .20	35.6 2.8	29.60 .11	26.0 1.9	10.10 .14	52.7 0.5
29.5	51.74 −.07	77.8 3.1	35.96 .14	38.4 2.7	29.69 .08	27.9 2.0	10.23 .11	53.1 0.3
May 9.5	51.59 .22	80.9 3.0	36.07 .08	41.1 2.6	29.75 .04	30.0 2.1	10.33 .08	53.3 0.2
19.4	51.30 .36	83.8 2.8	36.11 +.02	43.7 2.4	29.78 +.01	32.1 2.1	10.39 .05	53.5 −0.1
29.4	50.87 −.49	86.4 +2.5	36.10 −.03	46.0 −2.2	29.78 .02	34.1 +2.0	10.43 +.02	53.5 0.0
June 8.4	50.33 .60	88.7 2.1	36.03 .10	48.1 1.9	29.74 .05	36.0 1.8	10.44 .00	53.4 +0.1
18.4	49.68 .69	90.6 1.6	35.89 .16	49.9 1.6	29.68 .08	37.8 1.6	10.42 .03	53.3 0.2
28.3	48.94 .77	92.0 1.2	35.71 .21	51.4 1.3	29.59 .10	39.2 1.3	10.38 .06	53.0 0.3
July 8.3	48.14 .82	92.9 0.6	35.48 .25	52.4 0.9	29.48 .12	40.5 1.1	10.31 .08	52.7 0.3
18.3	47.30 −.86	93.3 +0.1	35.21 −.29	53.1 −0.4	29.34 .14	41.4 +0.8	10.22 −.10	52.4 +0.4
28.3	46.43 .87	93.1 −0.3	34.90 .31	53.3 0.0	29.20 .15	42.0 0.4	10.11 .12	52.0 0.4
Aug. 7.2	45.55 .87	92.4 0.9	34.58 .33	53.1 +0.4	29.04 .16	42.3 +0.1	9.98 .13	51.5 0.5
17.2	44.69 .85	91.2 1.5	34.25 .33	52.5 0.9	28.87 .17	42.2 −0.3	9.85 .13	51.0 0.5
27.2	43.86 .80	89.5 2.0	33.93 .31	51.4 1.3	28.70 .16	41.7 0.6	9.71 .13	50.5 0.5
Sept. 6.1	43.09 −.74	87.3 −2.4	33.63 −.28	49.9 +1.6	28.55 −.15	40.9 −1.0	9.59 .12	50.0 +0.5
16.1	42.39 .65	84.8 2.8	33.37 .23	48.1 1.9	28.41 .13	39.8 1.3	9.47 .10	49.5 0.4
26.1	41.79 .55	81.8 3.2	33.16 .17	46.0 2.2	28.29 .10	38.3 1.6	9.38 .07	49.1 0.4
Oct. 6.1	41.29 .43	78.5 3.4	33.02 .10	43.8 2.3	28.21 .06	36.5 2.0	9.32 - .04	48.7 0.3
16.0	40.93 .29	74.9 3.7	32.96 −.02	41.4 2.4	28.16 −.02	34.3 2.3	9.30 .00	48.5 +0.1
26.0	40.71 −.14	71.1 - 3.8	32.99 +.07	39.0 +2.3	28.16 +.03	31.9 2.5	9.33 +.05	48.5 −0.1
Nov. 5.0	40.64 +.02	67.3 3.9	33.11 .17	36.8 2.2	28.21 .08	29.3 2.7	9.41 .10	48.7 0.3
15.0	40.74 .18	63.4 3.8	33.33 .26	34.7 1.9	28.32 .13	26.4 2.9	9.53 .15	49.2 0.5
24.9	41.00 .34	59.6 3.7	33.64 .35	32.9 1.6	28.47 .18	23.5 3.0	9.71 .20	49.8 0.8
Dec. 4.9	41.42 .50	56.0 3.5	34.03 .43	31.4 1.2	28.68 .24	20.5 3.0	9.94 .25	50.7 1.0
14.9	42.00 +.64	52.7 −3.1	34.49 +.49	30.4 +0.8	28.93 +.27	17.5 2.9	10.21 +.29	51.9 −1.2
24.8	42.71 .77	49.8 2.6	35.01 .54	29.9 +0.3	29.22 .30	14.7 2.7	10.51 .31	53.2 1.4
34.8	43.54 +.87	47.4 −2.2	35.57 +.57	29.8 0.1	29.54 +.33	12.0 2.5	10.83 +.33	54.7 1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ursæ Minoris.		β Bootis.		β Libræ.		μ¹ Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 14 50	° ′ +74 34	h m 14 58	° ′ +40 47	h m 15 11	° ′ − 9 0	h m 15 20	° ′ +37 43
	s	″	s	″	s	″	s	″
Jan. 0.8	59.05 +.71	25.3 −2.6	1.37 +.33	42.8 −2.8	24.15 +.30	3.8 −1.6	33.20 +.31	72.5 −2.9
10.8	59.82 .80	23.0 2.1	1.72 .36	40.1 2.4	24.47 .32	5.4 1.7	33.52 .34	69.7 2.6
20.8	60.65 .85	21.2 1.5	2.09 .38	37.9 2.0	24.80 .33	7.1 1.6	33.87 .36	67.4 2.1
30.8	61.52 .88	20.0 0.8	2.47 .38	36.2 1.4	25.13 .33	8.7 1.6	34.23 .36	65.5 1.6
Feb. 9.7	62.41 .87	19.6 −0.1	2.85 .37	35.1 0.8	25.46 .32	10.2 1.4	34.60 .36	64.2 1.1
19.7	63.27 +.84	19.8 +0.6	3.22 +.36	34.6 −0.2	25.78 +.31	11.6 −1.3	34.96 +.35	63.4 −0.5
29.7	64.08 .78	20.7 1.2	3.56 .33	34.6 +0.4	26.08 .29	12.7 1.1	35.30 .33	63.2 +0.1
Mar. 10.7	64.82 .68	22.1 1.8	3.88 .30	35.3 0.9	26.36 .27	13.7 0.8	35.62 .30	63.6 0.7
20.6	65.45 .57	24.2 2.3	4.15 .26	36.5 1.4	26.62 .24	14.4 0.6	35.90 .27	64.6 1.2
30.6	65.97 .45	26.7 2.6	4.39 .22	38.1 1.8	26.85 .22	14.9 0.4	36.16 .24	66.0 1.6
Apr. 9.6	66.34 +.31	29.5 +2.9	4.59 +.18	40.1 +2.2	27.05 +.19	15.2 −0.2	36.37 +.20	67.8 +2.0
19.5	66.58 .16	32.5 3.1	4.75 .13	42.5 2.4	27.22 .16	15.3 0.0	36.55 .16	70.0 2.3
29.5	66.68 +.02	35.7 3.2	4.86 .09	45.0 2.6	27.37 .13	15.2 +0.1	36.69 .12	72.5 2.5
May 9.5	66.63 −.12	38.8 3.1	4.92 .05	47.6 2.6	27.49 .10	15.0 0.3	36.78 .08	75.0 2.6
19.5	66.45 .25	41.9 2.9	4.95 +.01	50.2 2.6	27.58 .07	14.7 0.4	36.84 +.04	77.6 2.6
29.4	66.14 −.37	44.7 +2.7	4.93 −.03	52.8 +2.5	27.63 +.04	14.3 +0.4	36.86 .00	80.2 +2.5
June 8.4	65.71 .48	47.2 2.3	4.88 .07	55.1 2.2	27.66 +.02	13.8 0.5	36.83 −.04	82.7 2.4
18.4	65.18 .57	49.4 1.9	4.79 .11	57.3 2.0	27.67 −.01	13.3 0.5	36.77 .08	84.9 2.1
28.4	64.57 .65	51.1 1.5	4.67 .14	59.1 1.7	27.64 .04	12.8 0.5	36.68 .11	86.9 1.8
July 8.3	63.88 .71	52.4 1.0	4.52 .16	60.6 1.3	27.58 .07	12.3 0.5	36.55 .14	88.6 1.5
18.3	63.14 −.76	53.1 +0.5	4.34 −.19	61.7 +0.9	27.50 −.09	11.8 +0.5	36.40 −.17	89.9 +1.1
28.3	62.36 .79	53.3 −0.1	4.15 .20	62.4 0.5	27.40 .11	11.4 0.5	36.22 .19	90.9 0.7
Aug. 7.2	61.56 .80	53.0 0.6	3.94 .21	62.7 +0.1	27.28 .13	10.9 0.5	36.02 .20	91.4 +0.3
17.2	60.76 .79	52.2 1.1	3.72 .22	62.5 −0.4	27.14 .14	10.5 0.4	35.81 .21	91.5 −0.1
27.2	59.98 .76	50.8 1.6	3.50 .22	61.9 0.8	27.01 .14	10.1 0.3	35.59 .21	91.2 0.5
Sept. 6.2	59.24 −.71	49.0 −2.1	3.28 −.21	60.9 −1.3	26.87 −.13	9.8 +0.3	35.38 −.21	90.5 −1.0
16.1	58.55 .65	46.7 2.5	3.08 .18	59.4 1.7	26.74 .12	9.5 0.2	35.18 .19	89.3 1.4
26.1	57.94 .57	44.0 2.9	2.91 .15	57.6 2.1	26.64 .09	9.4 +0.1	35.00 .17	87.8 1.8
Oct, 6.1	57.42 .46	40.9 3.2	2.78 .12	55.3 2.4	26.56 .06	9.4 −0.1	34.85 .13	85.8 2.1
16.1	57.01 .35	37.5 3.5	2.68 .07	52.7 2.8	26.51 −.02	9.6 0.3	34.73 .09	83.5 2.5
26.0	56.73 −.21	33.9 −3.7	2.64 −.02	49.8 −3.0	26.51 +.02	9.9 −0.5	34.67 −.04	80.8 −2.8
Nov. 5.0	56.59 −.07	30.1 3.8	2.65 +.04	46.7 3.2	26.56 .07	10.5 0.7	34.66 +.02	77.9 3.0
15.0	56.59 +.08	26.2 3.9	2.72 .10	43.4 3.4	26.66 .12	11.3 0.9	34.70 .07	74.7 3.2
24.9	56.75 .23	22.4 3.8	2.85 .16	40.0 3.4	26.80 .17	12.3 1.1	34.80 .13	71.5 3.3
Dec. 4.9	57.06 .38	18.7 3.6	3.04 .22	36.5 3.4	27.00 .22	13.4 1.3	34.96 .19	68.1 3.3
14.9	57.51 +.52	15.2 −3.3	3.28 +.27	33.2 −3.2	27.23 +.26	14.8 −1.4	35.18 +.24	64.8 −3.2
24.9	58.10 .64	12.1 2.9	3.57 .31	30.0 3.0	27.51 .29	16.3 1.6	35.44 .28	61.6 3.0
34.8	58.79 +.74	9.4 −2.5	3.90 +.34	27.2 −2.7	27.81 +.31	17.9 −1.7	35.74 +.32	58.7 −2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^2 Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ε Serpentis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 15 20	° ′ +72 11	h m 15 30	° ′ +27 3	h m 15 39	° ′ + 6 44	h m 15 45	° ′ + 4 47
	s	″	s	″	s	″	s	″
n. 0.9	51.77 +.56	51.4 −3.0	16.58 +.29	36.7 −2.8	8.19 +.28	58.7 −2.2	37.36 +.27	16.4 −2.1
10.8	52.39 .65	48.7 2.4	16.89 .31	34.1 2.5	8.49 .30	56.6 2.0	37.65 .30	14.4 2.0
20.8	53.08 .72	46.6 1.9	17.21 .33	31.7 2.1	8.79 .31	54.6 1.9	37.95 .31	12.5 1.8
30.8	53.83 .76	45.0 1.2	17.55 .34	29.8 1.7	9.11 .32	52.8 1.6	38.27 .32	10.7 1.6
b. 9.8	54.60 .77	44.1 −0.6	17.89 .34	28.3 1.2	9.43 .32	51.3 1.3	38.59 .32	9.2 1.3
19.7	55.37 +.76	43.9 +0.1	18.22 +.33	27.3 −0.7	9.75 +.31	50.1 −1.0	38.91 +.31	8.0 −1.0
29.7	56.11 .72	44.3 0.8	18.54 .31	26.9 −0.2	10.05 .30	49.3 0.7	39.21 .30	7.2 0.7
ar. 10.7	56.80 .65	45.5 1.4	18.84 .29	26.9 +0.3	10.34 .28	48.8 −0.3	39.50 .28	6.6 −0.3
20.6	57.42 .57	47.2 2.0	19.11 .26	27.5 0.8	10.60 .25	48.7 +0.1	39.77 .26	6.5 0.0
30.6	57.95 .47	49.4 2.4	19.36 .23	28.5 1.2	10.85 .23	48.9 0.4	40.02 .23	6.6 +0.3
r. 9.6	58.36 +.36	52.0 +2.8	19.57 +.20	29.9 +1.6	11.06 +.20	49.5 +0.7	40.24 +.21	7.1 +0.6
19.6	58.67 .24	54.9 3.0	19.75 .17	31.7 1.9	11.25 .18	50.3 0.9	40.43 .18	7.8 0.8
29.5	58.85 +.12	58.1 3.2	19.90 .13	33.6 2.1	11.41 .15	51.3 1.1	40.60 .15	8.8 1.0
ay 9.5	58.91 .00	61.3 3.2	20.01 .10	35.8 2.2	11.55 .12	52.5 1.2	40.74 .12	9.8 1.1
19.5	58.85 −.12	64.4 3.1	20.09 .06	38.1 2.2	11.65 .09	53.8 1.3	40.85 .10	11.0 1.2
29.5	58.67 −.23	67.5 +2.9	20.13 +.03	40.3 +2.2	11.72 +.06	55.1 +1.3	40.93 +.07	12.3 +1.3
ne 8.4	58.39 .33	70.3 2.6	20.14 −.01	42.4 2.1	11.77 +.03	56.5 1.3	40.99 +.04	13.6 1.2
18.4	58.01 .43	72.7 2.3	20.12 .04	44.5 1.9	11.78 .00	57.8 1.3	41.00 .00	14.8 1.2
28.4	57.53 .52	74.9 1.9	20.06 .07	46.3 1.7	11.76 −.03	59.0 1.2	40.99 −.03	15.9 1.1
ly 8.3	56.99 .58	76.5 1.4	19.98 .10	47.9 1.4	11.71 .06	60.1 1.0	40.95 .06	17.0 1.0
18.3	56.38 −.63	77.7 +0.9	19.86 −.13	49.2 +1.1	11.63 −.09	61.0 +0.8	40.88 −.09	17.9 +0.9
28.3	55.72 .67	78.4 +0.4	19.72 .15	50.2 0.8	11.53 .11	61.8 0.7	40.78 .11	18.7 0.7
g. 7.3	55.03 .70	78.6 −0.1	19.56 .17	50.8 0.5	11.41 .13	62.4 0.5	40.66 .13	19.4 0.5
17.2	54.33 .71	78.3 0.6	19.39 .18	51.1 +0.1	11.27 .14	62.9 0.3	40.52 .14	19.8 0.4
27.2	53.62 .70	77.4 1.1	19.21 .18	51.1 −0.2	11.12 .15	63.1 +0.1	40.37 .15	20.1 +0.2
pt. 6.2	52.93 −.67	76.0 −1.6	19.02 −.18	50.7 −0.6	10.97 −.15	63.2 −0.1	40.22 −.15	20.2 0.0
16.2	52.28 .62	74.1 2.1	18.85 .16	49.9 1.0	10.83 .14	63.0 0.3	40.08 .14	20.1 −0.2
26.1	51.68 .56	71.8 2.5	18.70 .14	48.7 1.3	10.70 .12	62.6 0.5	39.95 .12	19.7 0.5
t. 6.1	51.16 .48	69.1 2.9	18.56 .11	47.2 1.7	10.59 .09	61.9 0.8	39.83 .09	19.1 0.7
16.1	50.72 .38	66.0 3.2	18.47 .07	45.4 2.0	10.52 .05	61.0 1.0	39.76 .06	18.4 0.9
26.0	50.39 −.27	62.6 −3.5	18.42 −.03	43.2 −2.3	10.48 −.01	59.8 −1.3	39.72 −.02	17.3 −1.1
v. 5.0	50.17 .15	58.9 3.7	18.41 +.02	40.7 2.6	10.49 +.03	58.4 1.5	39.72 +.03	16.1 1.4
15.0	50.09 −.02	55.2 3.8	18.46 .07	38.1 2.8	10.55 .08	56.8 1.7	39.77 .08	14.6 1.6
25.0	50.14 +.12	51.3 3.8	18.56 .13	35.2 2.9	10.65 .13	55.0 1.9	39.88 .13	12.9 1.8
c. 4.9	50.32 .25	47.5 3.7	18.71 .18	32.2 3.0	10.81 .17	53.0 2.1	40.03 .17	11.0 1.9
14.9	50.64 +.38	43.9 −3.5	18.92 +.22	29.2 −2.9	11.01 +.22	50.9 −2.1	40.22 +.22	9.1 −2.0
24.9	51.08 .50	40.6 3.2	19.16 .26	26.3 2.8	11.25 .26	48.7 2.2	40.46 .25	7.0 2.1
34.9	51.63 +.59	37.6 −2.8	19.44 +.30	23.5 −2.7	11.52 +.28	46.6 −2.1	40.73 +.28	4.9 −2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpii.		β¹ Scorpii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 15 47	° ′ +78 6	h m 15 53	° ′ +27 10	h m 15 54	° ′ −22 19	h m 15 59	° ′ −19 31
	s	″	s	″	s	″	s	″
Jan. 0.9	42.68+ .67	29.6 −3.1	16.34 +.27	28.9 −2.8	10.30 +.30	36.6 −0.8	22.67 +.29	20.0 −0.9
10.9	43.44 .83	26.7 2.6	16.62 .30	26.2 2.6	10.61 .33	37.6 1.0	22.97 .31	21.0 1.0
20.8	44.34 .95	24.4 2.1	16.93 .32	23.8 2.2	10.95 .34	38.6 1.1	23.30 .33	22.1 1.1
30.8	45.34 1.03	22.6 1.5	17.26 .33	21.7 1.8	11.30 .35	39.7 1.1	23.64 .34	23.2 1.1
Feb. 9.8	46.41 1.08	21.4 0.8	17.59 .33	20.1 1.3	11.65 .35	40.8 1.1	23.99 .34	24.4 1.1
19.7	47.50+1.09	20.9 −0.1	17.92 +.32	19.0 −0.8	11.99 +.34	42.0 −1.1	24.32 +.33	25.5 −1.1
29.7	48.59 1.06	21.1 +0.5	18.25 .31	18.4 −0.3	12.33 .33	43.1 1.0	24.65 .32	26.5 1.0
Mar. 10.7	49.62 .99	22.0 1.2	18.55 .30	18.4 +0.2	12.64 .31	44.1 1.0	24.97 .31	27.5 0.9
20.7	50.56 .89	23.4 1.7	18.84 .27	18.9 0.7	12.95 .29	45.0 0.9	25.27 .29	28.3 0.8
30.6	51.39 .75	25.4 2.2	19.10 .25	19.8 1.1	13.23 .27	45.8 0.8	25.55 .27	29.0 0.6
Apr. 9.6	52.07+ .60	27.9 +2.6	19.33 +.22	21.2 +1.5	13.48 +.24	46.6 −0.7	25.80 +.24	29.6 −0.5
19.6	52.58 .43	30.7 2.9	19.54 .19	22.9 1.9	13.71 .22	47.2 0.6	26.03 .22	30.0 0.4
29.6	52.92 .25	33.8 3.1	19.71 .15	24.9 2.1	13.92 .19	47.7 0.5	26.24 .19	30.4 0.3
May 9.5	53.08+ .06	37.0 3.2	19.84 .12	27.1 2.2	14.09 .16	48.1 0.4	26.41 .16	30.6 0.2
19.5	53.05− .12	40.2 3.2	19.94 .08	29.4 2.3	14.23 .13	48.5 0.3	26.55 .13	30.8 0.1
29.5	52.84− .30	43.3 +3.0	20.01 +.05	31.7 +2.3	14.34 +.09	48.7 −0.2	26.67 +.10	30.9 −0.1
June 8.4	52.46 .46	46.3 2.8	20.04 +.01	34.0 2.2	14.42 .06	49.0 0.2	26.75 .06	30.9 0.0
18.4	51.92 .61	49.0 2.5	20.03 −.02	36.2 2.1	14.46 +.02	49.1 0.1	26.79 +.03	30.9 0.0
28.4	51.23 .75	51.3 2.1	20.00 .06	38.2 1.9	14.47 −.01	49.2 −0.1	26.81 −.01	30.9 +0.1
July 8.4	50.42 .87	53.2 1.7	19.92 .09	39.9 1.6	14.44 .05	49.3 0.0	26.78 .04	30.8 0.1
18.3	49.50− .96	54.7 +1.2	19.82 −.12	41.4 +1.3	14.37 −.08	49.2 +0.1	26.72 −.07	30.6 +0.2
28.3	48.50 1.04	55.7 0.7	19.68 .15	42.6 1.0	14.28 .11	49.1 0.2	26.63 .10	30.4 0.2
Aug. 7.3	47.43 1.09	56.2 +0.2	19.53 .17	43.4 0.7	14.16 .13	48.9 0.2	26.52 .12	30.2 0.3
17.3	46.32 1.12	56.2 −0.3	19.35 .18	43.9 +0.3	14.02 .15	48.6 0.3	26.38 .14	29.9 0.3
27.2	45.20 1.12	55.7 0.8	19.16 .19	44.1 −0.1	13.87 .16	48.3 0.4	26.23 .15	29.6 0.4
Sept. 6.2	44.09−1.09	54.6 −1.3	18.97 −.19	43.8 −0.4	13.71 −.16	47.9 +0.4	26.08 −.16	29.2 +0.4
16.2	43.02 1.04	53.1 1.8	18.79 .18	43.2 0.8	13.55 .15	47.4 0.5	25.92 .15	28.8 0.4
26.1	42.02 .96	51.0 2.2	18.62 .16	42.2 1.2	13.42 .13	46.9 0.5	25.78 .13	28.4 0.4
Oct. 6.1	41.10 .86	48.6 2.6	18.47 .13	40.9 1.5	13.30 .10	46.4 0.5	25.66 .10	28.0 0.4
16.1	40.30 .73	45.8 3.0	18.35 .10	39.2 1.9	13.22 .06	45.9 0.4	25.58 .06	27.6 0.3
26.1	39.65− .58	42.6 −3.3	18.27 −.05	37.1 −2.2	13.18 −.01	45.5 +0.3	25.54 −.01	27.4 +0.2
Nov. 5.0	39.15 .40	39.1 3.5	18.24 .00	34.8 2.5	13.19 +.04	45.2 0.2	25.54 +.03	27.2 +0.1
15.0	38.84 .22	35.5 3.7	18.26 +.05	32.2 2.7	13.25 .09	45.0 +0.1	25.60 .08	27.2 −0.1
25.0	38.72− .02	31.8 3.7	18.34 .10	29.4 2.9	13.37 .14	45.0 −0.1	25.71 .13	27.4 0.3
Dec. 5.0	38.80+ .18	28.0 3.7	18.46 .15	26.4 3.0	13.54 .19	45.3 0.3	25.86 .18	27.8 0.5
14.9	39.08+ .38	24.4 −3.5	18.64 +.20	23.5 −3.0	13.76 +.24	45.7 −0.5	26.07 +.23	28.3 −0.6
24.9	39.56 .57	20.9 3.3	18.87 .24	20.5 2.9	14.02 .28	46.3 0.7	26.33 .27	29.1 0.8
34.9	40.21+ .72	17.8 −2.9	19.13 +.28	17.7 −2.7	14.31 +.31	47.2 −0.9	26.61 +.30	29.9 −0.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 2320.		δ Ophiuchi.		τ Herculis.		η Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 16 5	° ′ +68 4	h m 16 8	° ′ − 3 25	h m 16 16	° ′ +46 33	h m 16 22	° ′ +61 44
	s	″	s	″	s	″	s	″
ı. 0.9	59.82 +.39	42.5 −3.3	53.07 +.26	44.2 −1.7	35.80 +.27	21.1 −3.3	33.24 +.31	39.2 −3.4
10.9	60.26 .48	39.4 2.9	53.34 .29	45.9 1.7	36.09 .31	18.0 2.9	33.59 .38	35.9 3.0
20.8	60.78 .55	36.7 2.4	53.64 .31	47.5 1.6	36.42 .35	15.2 2.5	34.00 .44	33.1 2.6
30.8	61.36 .60	34.6 1.8	53.96 .32	49.1 1.4	36.78 .37	12.9 2.0	34.47 .48	30.8 2.0
b. 9.8	61.98 .63	33.1 1.2	54.28 .32	50.4 1.3	37.17 .39	11.2 1.5	34.96 .51	29.0 1.4
19.8	62.61 +.64	32.3 −0.5	54.59 +.31	51.6 −1.0	37.56 +.39	10.0 −0.8	35.48 +.52	27.9 −0.8
29.7	63.25 .63	32.1 +0.2	54.91 .30	52.5 0.8	37.95 .38	9.5 −0.2	36.00 .51	27.5 −0.1
r. 10.7	63.87 .59	32.6 0.8	55.20 .29	53.1 0.5	38.32 .36	9.6 +0.4	36.51 .50	27.7 +0.6
20.7	64.44 .54	33.8 1.5	55.49 .27	53.5 −0.2	38.67 .34	10.4 1.0	37.00 .46	28.6 1.2
30.7	64.96 .48	35.6 2.0	55.75 .25	53.6 0.0	39.00 .31	11.7 1.6	37.44 .42	30.1 1.8
r. 9.6	65.40 +.40	37.8 +2.5	55.99 +.23	53.5 +0.3	39.30 +.27	13.5 +2.0	37.83 +.36	32.2 +2.3
19.6	65.76 .32	40.5 2.8	56.21 .21	53.1 0.5	39.55 .23	15.8 2.4	38.16 .30	34.7 2.7
29.6	66.04 .22	43.5 3.1	56.40 .18	52.5 0.6	39.76 .18	18.4 2.7	38.42 .23	37.6 3.0
y 9.5	66.21 .13	46.6 3.2	56.57 .15	51.8 0.8	39.92 .14	21.2 2.9	38.62 .16	40.7 3.2
19.5	66.29 +.03	49.9 3.3	56.71 .12	51.0 0.9	40.04 .09	24.2 3.0	38.74 .08	43.9 3.2
29.5	66.27 −.07	53.2 +3.2	56.82 +.09	50.2 +0.9	40.10 +.04	27.2 +3.0	38.78 +.01	47.1 +3.2
ıe 8.5	66.16 .16	56.3 3.0	56.90 .06	49.3 0.9	40.12 −.01	30.2 2.9	38.75 −.07	50.3 3.1
18.4	65.95 .25	59.2 2.8	56.94 +.03	48.4 0.9	40.09 .06	33.0 2.7	38.64 .14	53.4 2.9
28.4	65.66 .33	61.8 2.4	56.95 .00	47.5 0.8	40.01 .10	35.6 2.5	38.47 .21	56.1 2.7
y 8.4	65.30 .40	64.1 2.0	56.93 −.04	46.7 0.8	39.88 .15	37.9 2.1	38.23 .27	58.6 2.3
18.4	64.86 −.46	65.9 +1.6	56.88 −.07	46.0 +0.7	39.72 −.19	39.8 +1.8	37.93 −.32	60.7 +1.9
28.3	64.37 .51	67.3 1.1	56.79 .10	45.4 0.6	39.51 .22	41.4 1.3	37.58 .37	62.3 1.4
;. 7.3	63.83 .55	68.2 0.6	56.68 .12	44.8 0.5	39.28 .25	42.5 0.9	37.19 .41	63.5 0.9
17.3	63.26 .58	68.6 +0.1	56.55 .14	44.4 0.4	39.02 .27	43.2 +0.5	36.76 .44	64.2 +0.4
27.2	62.68 .59	68.5 −0.4	56.41 .15	44.0 0.3	38.74 .28	43.5 0.0	36.32 .45	64.4 −0.1
›t. 6.2	62.08 −.59	67.8 −0.9	56.26 −.15	43.8 +0.2	38.45 −.28	43.2 −0.5	35.86 −.45	64.0 −0.6
16.2	61.50 .56	66.6 1.4	56.10 .14	43.7 0.0	38.17 .27	42.5 1.0	35.41 .44	63.2 1.1
26.2	60.95 .53	65.0 1.9	55.96 .13	43.7 −0.1	37.90 .26	41.3 1.4	34.98 .42	61.8 1.6
t. 6.1	60.45 .47	62.8 2.4	55.84 .11	44.0 0.3	37.66 .23	39.6 1.9	34.57 .38	60.0 2.1
16.1	60.01 .40	60.3 2.8	55.75 .07	44.3 0.5	37.45 .19	37.5 2.3	34.22 .33	57.7 2.5
26.1	59.64 −.32	57.3 −3.1	55.70 −.03	44.9 −0.7	37.28 −.14	35.0 −2.7	33.92 −.26	55.0 −2.9
v. 5.1	59.36 .22	54.0 3.4	55.69 +.01	45.7 0.9	37.17 .08	32.1 3.0	33.70 .19	51.9 3.2
15.0	59.19 .12	50.5 3.6	55.72 .06	46.6 1.1	37.12 −.02	29.0 3.3	33.55 .10	48.5 3.5
25.0	59.13 −.01	46.8 3.7	55.81 .11	47.8 1.2	37.13 +.04	25.6 3.4	33.49 −.01	44.9 3.7
c. 5.0	59.18 +.11	43.0 3.8	55.95 .16	49.1 1.4	37.21 .11	22.1 3.5	33.53 +.08	41.2 3.7
14.9	59.35 +.22	39.3 −3.7	56.13 +.20	50.6 −1.5	37.36 +.17	18.6 −3.5	33.65 +.17	37.5 −3.7
24.9	59.62 .33	35.7 3.5	56.35 .24	52.1 1.6	37.56 .23	15.1 3.4	33.87 .26	33.8 3.5
34.9	60.00 +.42	32.4 −3.2	56.61 +.27	53.8 −1.6	37.82 +.28	11.8 −3.2	34.17 +.33	30.4 −3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Scorpii. (*Antares.*)		β Herculis.		A Draconis.		ζ Ophiuchi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 16 23	° ′ −26 12	h m 16 25	° ′ +21 42	h m 16 28	° ′ +68 59	h m 16 31	° ′ −10 21
	s	″	s	″	s	″	s	″
Jan. 0.9	0.96 +.28	8.6 −0.5	44.18 +.24	44.8 −2.7	8.70 +.35	15.3 −3.4	25.17 +.25	30.8 −1.2
10.9	1.27 .31	9.1 0.6	44.44 .27	42.1 2.5	9.10 .45	12.0 3.0	25.44 .28	32.0 1.3
20.9	1.60 .34	9.8 0.8	44.72 .29	39.8 2.2	9.60 .53	9.2 2.6	25.74 .30	33.3 1.3
30.8	1.94 .35	10.6 0.9	45.02 .31	37.7 1.9	10.16 .59	6.9 2.0	26.05 .31	34.5 1.2
Feb. 9.8	2.30 .36	11.4 0.9	45.34 .32	36.0 1.5	10.78 .63	5.1 1.4	26.37 .32	35.7 1.1
19.8	2.65 +.35	12.3 −0.9	45.66 +.32	34.8 −1.0	11.43 +.65	4.0 −0.8	26.69 +.32	36.7 −0.9
29.8	3.00 .34	13.1 0.9	45.98 .31	34.0 −0.5	12.09 .65	3.6 −0.1	27.01 .31	37.5 0.7
Mar. 10.7	3.34 .33	14.0 0.9	46.29 .30	33.7 0.0	12.74 .63	3.8 +0.6	27.32 .30	38.2 0.5
20.7	3.67 .32	14.8 0.8	46.58 .28	33.9 +0.4	13.35 .59	4.7 1.2	27.62 .29	38.6 0.4
30.7	3.97 .30	15.5 0.8	46.86 .26	34.6 0.9	13.92 .53	6.3 1.8	27.90 .27	38.9 −0.1
Apr. 9.6	4.26 +.28	16.2 −0.7	47.11 +.24	35.7 +1.3	14.41 +.46	8.4 +2.3	28.16 +.25	38.9 +0.1
19.6	4.52 .25	16.8 0.6	47.34 .21	37.1 1.6	14.83 .37	10.9 2.7	28.40 .23	38.8 0.2
29.6	4.76 .22	17.4 0.6	47.54 .18	38.9 1.9	15.16 .28	13.8 3.0	28.62 .21	38.5 0.3
May 9.6	4.97 .19	17.9 0.5	47.70 .15	40.9 2.1	15.40 .18	16.9 3.2	28.82 .18	38.1 0.4
19.5	5.14 .16	18.4 0.5	47.84 .12	43.0 2.2	15.53 +.08	20.2 3.3	28.99 .15	37.6 0.5
29.5	5.29 +.13	18.8 −0.5	47.94 +.09	45.2 +2.2	15.56 −.02	23.5 +3.3	29.12 +.12	37.0 +0.5
June 8.5	5.39 .09	19.2 0.4	48.01 .05	47.4 2.2	15.49 .12	26.7 3.1	29.23 .09	36.5 0.6
18.4	5.47 .05	19.5 0.4	48.05 +.01	49.6 2.1	15.32 .22	29.7 2.9	29.29 .05	35.9 0.6
28.4	5.50 +.02	19.8 0.3	48.04 −.02	51.6 1.9	15.05 .31	32.6 2.7	29.33 +.02	35.3 0.6
July 8.4	5.49 −.02	20.1 0.3	48.00 .06	53.4 1.7	14.71 .39	35.1 2.3	29.33 −.02	34.8 0.5
18.4	5.44 −.06	20.2 −0.2	47.93 −.09	55.0 +1.5	14.28 −.46	37.2 +1.9	29.29 −.05	34.3 +0.5
28.3	5.36 .09	20.3 −0.1	47.82 .12	56.3 1.2	13.79 .52	38.8 1.5	29.22 .09	33.8 0.4
Aug. 7.3	5.25 .12	20.3 0.0	47.68 .15	57.4 0.9	13.24 .57	40.1 1.0	29.12 .11	33.4 0.4
17.3	5.11 .15	20.3 +0.1	47.53 .17	58.1 0.6	12.65 .60	40.8 +0.5	28.99 .13	33.1 0.3
27.3	4.95 .16	20.1 0.2	47.35 .18	58.5 +0.2	12.03 .62	41.0 −0.1	28.85 .15	32.8 0.3
Sept. 6.2	4.79 −.17	19.7 +0.3	47.17 −.18	58.6 −0.1	11.40 −.63	40.7 −0.6	28.70 −.15	32.5 +0.2
16.2	4.62 .16	19.3 0.4	46.98 .18	58.3 0.4	10.77 .62	39.8 1.1	28.54 .15	32.3 0.2
26.2	4.46 .15	18.8 0.5	46.81 .17	57.7 0.8	10.17 .58	38.5 1.6	28.39 .14	32.2 +0.1
Oct. 6.1	4.32 .12	18.3 0.5	46.65 .14	56.7 1.1	9.60 .54	36.6 2.1	28.26 .12	32.1 0.0
16.1	4.21 .08	17.7 0.5	46.52 .11	55.4 1.5	9.09 .47	34.3 2.5	28.15 .09	32.2 −0.1
26.1	4.15 −.04	17.1 +0.5	46.42 −.07	53.8 −1.8	8.66 −.39	31.6 −2.9	28.08 −.05	32.4 −0.3
Nov. 5.1	4.13 +.01	16.6 0.4	46.37 −.03	51.8 2.1	8.31 .30	28.5 3.2	28.05 .00	32.7 0.4
15.0	4.16 .06	16.2 0.3	46.36 +.02	49.6 2.3	8.07 .19	25.1 3.5	28.07 +.04	33.2 0.6
25.0	4.25 .11	15.9 +0.2	46.41 .07	47.2 2.5	7.93 −.07	21.5 3.7	28.14 .09	33.8 0.7
Dec. 5.0	4.40 .17	15.7 0.0	46.51 .12	44.6 2.6	7.92 +.05	17.8 3.7	28.26 .14	34.7 0.9
14.9	4.59 +.22	15.8 −0.2	46.65 +.17	41.9 −2.7	8.03 +.16	14.1 −3.7	28.43 +.19	35.7 −1.0
24.9	4.84 .26	16.0 0.4	46.85 .21	39.1 2.7	8.25 .28	10.4 3.5	28.64 .23	36.8 1.1
34.9	5.12 +.30	16.4 −0.5	47.08 +.25	36.5 −2.6	8.59 +.38	7.0 −3.3	28.89 +.26	37.9 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		α Trianguli Australis.		η Herculis.		κ Ophiuchi.		ε Ursæ Minoris.	
		Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
		h m 16 37	° ′ −68 50	h m 16 39	° ′ +39 6	h m 16 52	° ′ + 9 31	h m 16 56	° ′ +82 11
		s	″	s	″	s	″	s	″
Jan.	0.9	36.41 +.57	9.8 +1.8	18.72 +.23	56.2 −3.2	43.94 +.22	61.2 −2.1	28.79+ .52	72.1 −3.4
	10.9	37.03 .65	8.2 1.4	18.97 .27	53.1 2.9	44.18 .25	59.1 2.1	29.45 .80	68.9 3.1
	20.9	37.71 .72	6.9 1.0	19.26 .31	50.3 2.6	44.44 .27	57.1 1.9	30.39 1.06	66.0 2.7
	30.8	38.46 .76	6.1 0.6	19.59 .33	47.9 2.1	44.72 .29	55.3 1.7	31.57 1.27	63.5 2.2
Feb.	9.8	39.23 .79	5.7 +0.2	19.93 .35	46.0 1.6	45.02 .30	53.8 1.4	32.94 1.44	61.6 1.6
	19.8	40.03 +.80	5.7 −0.2	20.28 +.35	44.6 −1.1	45.33 +.31	52.6 −1.0	34.45+1.55	60.2 −1.0
	29.8	40.83 .79	6.1 0.6	20.64 .35	43.9 −0.5	45.64 .30	51.7 0.7	36.03 1.59	59.6 −0.3
Mar.	10.7	41.62 .77	6.9 1.0	20.99 .34	43.7 +0.1	45.94 .30	51.2 −0.3	37.63 1.58	59.5 +0.3
	20.7	42.38 .74	8.0 1.3	21.32 .32	44.1 0.7	46.23 .29	51.2 +0.1	39.19 1.51	60.2 0.9
	30.7	43.10 .70	9.5 1.6	21.64 .30	45.1 1.3	46.51 .27	51.5 0.5	40.65 1.38	61.4 1.5
Apr.	9.6	43.77 +.65	11.3 −1.9	21.92 +.27	46.6 +1.8	46.78 +.25	52.2 +0.8	41.96+1.21	63.2 +2.0
	19.6	44.39 .58	13.3 2.1	22.18 .24	48.6 2.2	47.02 .23	53.2 1.1	43.07 1.00	65.5 2.5
	29.6	44.94 .51	15.5 2.3	22.41 .20	51.0 2.5	47.24 .21	54.4 1.4	43.96 .75	68.2 2.8
May	9.6	45.42 .43	17.9 2.5	22.59 .16	53.6 2.7	47.44 .18	55.9 1.6	44.58 .49	71.2 3.1
	19.5	45.81 .34	20.5 2.6	22.74 .12	56.3 2.8	47.61 .15	57.5 1.7	44.94+ .21	74.3 3.2
	29.5	46.11 +.25	23.0 −2.6	22.84 +.08	59.2 +2.9	47.75 +.12	59.3 +1.7	45.01− .07	77.6 +3.2
June	8.5	46.32 .16	25.6 2.6	22.90 +.04	62.1 2.8	47.85 .09	61.0 1.7	44.80 .35	80.8 3.2
	18.5	46.42 +.06	28.2 2.5	22.91 −.01	64.9 2.7	47.92 .05	62.7 1.6	44.31 .62	83.9 3.0
	28.4	46.43 −.04	30.6 2.3	22.89 .05	67.5 2.5	47.96 +.02	64.3 1.5	43.57 .87	86.8 2.8
July	8.4	46.34 .14	32.8 2.1	22.81 .09	69.8 2.2	47.95 −.02	65.8 1.4	42.58−1.10	89.5 2.5
	18.4	46.15 −.23	34.8 −1.8	22.70 −.13	71.9 +1.9	47.92 −.06	67.1 +1.3	41.38−1.30	91.8 +2.1
	28.3	45.87 .32	36.4 1.5	22.55 .17	73.6 1.5	47.84 .09	68.3 1.1	39.98 1.47	93.7 1.7
Aug.	7.3	45.52 .39	37.7 1.1	22.36 .20	75.0 1.1	47.74 .12	69.3 0.9	38.43 1.61	95.2 1.2
	17.3	45.10 .44	38.6 0.7	22.15 .22	76.0 0.7	47.61 .14	70.0 0.6	36.76 1.72	96.2 0.8
	27.3	44.63 .48	39.0 −0.2	21.92 .24	76.5 +0.3	47.46 .16	70.5 0.4	34.99 1.79	96.7 +0.3
Sept.	6.2	44.15 −.49	38.9 +0.3	21.67 −.25	76.6 −0.1	47.29 −.17	70.8 +0.2	33.18−1.82	96.7 −0.2
	16.2	43.66 .48	38.4 0.8	21.42 .24	76.2 0.6	47.13 .17	70.8 −0.1	31.36 1.81	96.2 0.6
	26.2	43.19 .44	37.4 1.2	21.19 .23	75.4 1.1	46.96 .16	70.6 0.4	29.57 1.75	95.3 1.2
Oct.	6.2	42.77 .39	36.0 1.6	20.97 .21	74.1 1.5	46.81 .14	70.1 0.6	27.85 1.66	93.8 1.7
	16.1	42.42 .31	34.1 2.0	20.77 .17	72.4 1.9	46.68 .11	69.4 0.9	26.25 1.52	91.9 2.2
	26.1	42.16 −.21	32.0 +2.3	20.62 −.13	70.3 −2.3	46.58 −.08	68.4 −1.1	24.80−1.34	89.5 −2.6
Nov.	5.1	42.00 −.09	29.6 2.5	20.51 .08	67.8 2.6	46.52 .04	67.1 1.4	23.56 1.13	86.7 2.9
	15.0	41.97 +.03	27.0 2.6	20.45 −.03	65.0 2.9	46.50 +.01	65.6 1.6	22.55 .87	83.7 3.2
	25.0	42.06 .16	24.4 2.6	20.45 +.03	61.9 3.1	46.53 .06	63.9 1.8	21.81 .60	80.3 3.4
Dec.	5.0	42.28 .28	21.8 2.5	20.51 .09	58.7 3.3	46.61 .11	62.0 2.0	21.36− .30	76.9 3.5
	15.0	42.62 +.40	19.4 +2.3	20.63 +.15	55.4 −3.3	46.74 +.15	59.9 −2.1	21.22+ .02	73.3 3.5
	24.9	43.08 .50	17.3 2.0	20.80 .20	52.1 3.3	46.92 .19	57.8 2.1	21.40 .33	69.8 3.4
	34.9	43.63 +.60	15.4 +1.7	21.03 +.25	48.9 −3.1	47.13 +.23	55.7 2.1	21.88+ .63	66.4 3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		*d* Herculis.		α¹ Herculis.		*b* Ophiuchi.		β Draconis.	
		Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.
		h m 16 57	° ′ +33 42	h m 17 9	° ′ +14 30	h m 17 20	° ′ −24 4	h m 17 28	° ′ +52 22
		s	″	s	″	s	″	s	″
Jan.	0.9	44.89 +.21	53.6 −3.1	53.44 +.20	20.4 −2.3	0.19 +.23	52.9 −0.2	3.17 +.17	27.6 −3.5
	10.9	45.12 .25	50.7 2.9	53.66 .23	18.1 2.2	0.44 .27	53.1 0.3	3.37 .24	24.1 3.3
	20.9	45.39 .28	47.9 2.6	53.91 .26	15.9 2.1	0.73 .30	53.5 0.4	3.64 .29	21.0 3.0
	30.9	45.69 .31	45.5 2.2	54.18 .28	14.0 1.8	1.03 .32	53.9 0.4	3.96 .34	18.2 2.6
Feb.	9.8	46.01 .32	43.5 1.7	54.47 .30	12.3 1.5	1.36 .33	54.3 0.4	4.32 .37	15.8 2.1
	19.8	46.34 +.33	42.1 −1.2	54.77 +.30	11.0 −1.1	1.70 +.34	54.8 −0.4	4.71 +.40	14.0 −1.5
	29.8	46.68 .33	41.2 0.6	55.08 .31	10.1 0.7	2.04 .34	55.2 0.4	5.12 .41	12.8 0.9
Mar.	10.8	47.01 .33	40.8 −0.1	55.39 .30	9.6 −0.2	2.38 .34	55.6 0.3	5.53 .41	12.3 −0.2
	20.7	47.33 .32	41.0 +0.5	55.69 .29	9.6 +0.2	2.71 .33	55.9 0.3	5.95 .41	12.4 +0.4
	30.7	47.64 .30	41.8 1.0	55.98 .28	10.0 0.6	3.04 .32	56.1 0.2	6.35 .39	13.2 1.0
Apr.	9.7	47.93 +.28	43.1 +1.5	56.25 +.27	10.8 +1.0	3.35 +.31	56.3 −0.2	6.73 +.36	14.6 +1.6
	19.6	48.20 .25	44.9 1.9	56.51 .25	12.0 1.3	3.65 .29	56.4 0.1	7.07 .33	16.5 2.1
	29.6	48.43 .22	47.0 2.3	56.74 .22	13.5 1.6	3.93 .27	56.5 0.1	7.38 .29	18.9 2.6
May	9.6	48.63 .19	49.5 2.5	56.95 .20	15.2 1.8	4.18 .24	56.6 0.1	7.65 .24	21.6 2.9
	19.6	48.80 .15	52.1 2.7	57.13 .17	17.1 1.9	4.41 .21	56.7 0.1	7.86 .19	24.6 3.1
	29.5	48.93 +.11	54.8 +2.7	57.28 +.13	19.0 +2.0	4.61 +.18	56.7 −0.1	8.03 +.13	27.9 +3.3
June	8.5	49.01 .07	57.6 2.7	57.40 .10	21.1 2.0	4.77 .15	56.8 0.1	8.13 .07	31.1 3.3
	18.5	49.06 +.02	60.3 2.6	57.48 .06	23.1 2.0	4.90 .11	56.9 0.1	8.17 +.01	34.4 3.2
	28.4	49.06 −.02	62.9 2.5	57.53 +.03	25.0 1.9	4.99 .06	57.0 0.1	8.16 −.05	37.6 3.1
July	8.4	49.02 .0	65.2 2.3	57.53 −.01	26.8 1.7	5.03 +.02	57.1 0.1	8.08 .10	40.5 2.8
	18.4	48.94 −.10	67.4 +2.0	57.50 −.05	28.4 +1.5	5.03 −.02	57.3 −0.1	7.95 −.16	43.2 +2.5
	28.4	48.82 .14	69.2 1.7	57.43 .08	29.8 1.3	4.99 .06	57.4 0.1	7.76 .21	45.6 2.2
Aug.	7.3	48.67 .17	70.7 1.3	57.33 .12	31.0 1.1	4.91 .10	57.5 −0.1	7.53 .26	47.6 1.8
	17.3	48.48 .20	71.8 0.9	57.20 .14	31.9 0.8	4.80 .13	57.5 0.0	7.25 .29	49.2 1.4
	27.3	48.28 .21	72.5 0.5	57.05 .	32. 0.5	4.65 .15	57.5 0.0	6.94 .32	50.4 0.9
Sept.	6.3	48.05 −.22	72.8 +0.1	56.88 −.17	32.9 +0.2	4.49 −.17	57.5 +0.1	6.61 −.34	51.0 +0.4
	16.2	47.83 .22	72.7 −0.3	56.70 .18	33.0 −0.1	4.32 .17	57.3 0.2	6.26 .35	51.1 −0.1
	26.2	47.60 .22	72.1 0.8	56.52 .17	32.8 0.4	4.15 .17	57.1 0.2	5.91 .34	50.8 0.6
Oct.	6.2	47.39 .20	71.1 1.2	56.36 .16	32.3 0.7	3.98 .15	56.8 0.3	5.57 .33	49.9 1.1
	16.1	47.21 .17	69.7 1.6	56.21 .13	31.5 1.	3.84 .12	56.5 0.3	5.26 .30	48.5 1.6
	26.1	47.06 −.13	67.9 −2.0	56.09 −.10	30.4 −1.3	3.73 −.09	56.2 +0.3	4.98 −.26	46.7 −2.1
Nov.	5.1	46.95 .09	65.7 2.3	56.01 .06	29.0 1.5	3.67 −.05	55.8 0.3	4.74 .21	44.4 2.5
	15.1	46.88 −.04	63.2 2.6	55.98 −.01	27.3 1.8	3.64 .00	55.5 0.3	4.57 .15	41.7 2.9
	25.0	46.88 +.02	60.5 2.8	55.99 +.03	25.4 2.0	3.67 +.06	55.2 0.2	4.45 .08	38.7 3.2
Dec.	5.0	46.92 .07	57.5 3.0	56.05 .08	23.3 2.2	3.75 .11	55.1 +0.1	4.41 −.01	35.4 3.4
	15.0	47.02 +.13	54.4 −3.1	56.15 +.13	21.0 −2.3	3.89 +.16	55.0 0.0	4.44 +.06	31.9 −3.5
	25.0	47.18 .18	51.3 3.1	56.31 .17	18.7 2.3	4.07 .20	55.1 −0.1	4.53 .13	28.3 3.5
	34.9	47.38 +.22	48.2 −3.0	56.50 +.21	16.4 −2.3	4.30 +.24	55.3 −0.2	4.70 +.19	24.9 −3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		α Ophiuchi.		ω Draconis.		μ Herculis.		ψ¹ Draconis.	
		Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
		h m 17 30	° ′ +12 37	h m 17 37	° ′ +68 47	h m 17 42	° ′ +27 46	h m 17 43	° ′ +72 11
		s	″	s	″	s	″	s	″
Jan.	1.0	5.49 +.18	57.8 −2.2	30.14 +.17	67.7 −3.7	22.20 +.16	41.4 −2.9	42.85 +.16	45.9 −3.6
	10.9	5.69 .22	55.6 2.1	30.37 .28	64.2 3.4	22.38 .20	38.5 2.7	43.08 .29	42.3 3.4
	20.9	5.92 .25	53.5 2.0	30.70 .38	60.9 3.1	22.60 .24	35.9 2.5	43.43 .41	39.0 3.1
	30.9	6.18 .27	51.6 1.8	31.13 .47	58.0 2.7	22.86 .27	33.4 2.2	43.90 .52	36.1 2.7
Feb.	9.8	6.47 .29	50.0 1.5	31.65 .54	55.6 2.2	23.14 .29	31.4 1.8	44.48 .61	33.6 2.2
	19.8	6.76 +.30	48.7 −1.1	32.22 +.59	53.7 −1.6	23.43 +.31	29.7 −1.4	45.13 +.68	31.6 −1.7
	29.8	7.06 .30	47.8 0.7	32.84 .63	52.4 0.9	23.75 .31	28.6 0.9	45.83 .70	30.3 1.0
Mar.	10.8	7.37 .30	47.3 −0.3	33.48 .64	51.8 −0.3	24.06 .32	28.0 −0.4	46.57 .74	29.6 0.3
	20.7	7.67 .30	47.2 +0.1	34.12 .63	51.9 +0.4	24.38 .31	27.9 +0.2	47.32 .74	29.6 +0.3
	30.7	7.96 .29	47.5 0.5	34.75 .61	52.6 1.1	24.69 .30	28.3 0.7	48.05 .71	30.2 1.0
Apr.	9.7	8.24 +.28	48.3 +0.9	35.34 +.56	54.0 +1.7	24.99 +.29	29.3 +1.2	48.74 +.66	31.5 +1.6
	19.7	8.51 .26	49.3 1.2	35.87 .50	56.0 2.2	25.27 .27	30.7 1.6	49.37 .59	33.4 2.1
	29.6	8.76 .24	50.7 1.5	36.34 .43	58.4 2.6	25.54 .25	32.5 2.0	49.92 .50	35.8 2.6
May	9.6	8.98 .21	52.4 1.7	36.73 .34	61.2 3.0	25.77 .22	34.6 2.3	50.38 .40	38.5 2.9
	19.6	9.19 .18	54.2 1.9	37.03 .25	64.4 3.2	25.98 .19	37.0 2.5	50.73 .29	41.6 3.2
	29.6	9.36 +.15	56.1 +2.0	37.24 +.15	67.7 +3.4	26.16 +.16	39.6 +2.6	50.97 +.18	44.9 +3.3
June	8.5	9.49 .12	58.1 2.0	37.34 +.05	71.1 3.4	26.30 .12	42.2 2.6	51.08 +.06	48.3 3.4
	18.5	9.60 .08	60.1 1.9	37.34 −.05	74.5 3.4	26.40 .08	44.9 2.6	51.07 −.06	51.7 3.3
	28.5	9.66 .05	62.0 1.8	37.23 .15	77.8 3.2	26.45 +.04	47.5 2.5	50.94 .19	55.0 3.2
July	8.4	9.69 +.01	63.8 1.7	37.03 .25	80.9 3.0	26.47 −.01	49.9 2.3	50.70 .30	58.1 3.0
	18.4	9.67 −.03	65.4 +1.5	36.73 −.34	83.8 +2.7	26.44 −.05	52.1 +2.1	50.34 −.41	61.0 +2.7
	28.4	9.62 .07	66.9 1.3	36.35 .42	86.4 2.4	26.37 .09	54.1 1.9	49.88 .51	63.6 2.4
Aug.	7.4	9.53 .10	68.1 1.1	35.89 .49	88.5 1.9	26.26 .13	55.9 1.6	49.32 .59	65.8 2.0
	17.3	9.42 .13	69.1 0.9	35.36 .55	90.2 1.5	26.11 .16	57.3 1.2	48.69 .67	67.6 1.6
	27.3	9.27 .15	69.8 0.6	34.78 .60	91.5 1.0	25.94 .18	58.3 0.9	47.99 .72	68.9 1.2
Sept.	6.3	9.11 −.17	70.3 +0.3	34.16 −.63	92.3 +0.5	25.74 −.20	59.0 +0.5	47.24 −.76	69.8 +0.6
	16.2	8.93 .18	70.5 0.0	33.52 .64	92.5 0.0	25.54 .21	59.3 +0.1	46.47 .78	70.1 +0.1
	26.2	8.75 .17	70.4 −0.2	32.87 .64	92.3 −0.5	25.32 .21	59.2 −0.3	45.69 .77	69.9 0.5
Oct.	6.2	8.59 .16	70.0 0.5	32.23 .62	91.5 1.1	25.12 .20	58.7 0.7	44.92 .75	69.2 1.0
	16.2	8.43 .14	69.3 0.8	31.63 .58	90.1 1.6	24.93 .18	57.8 1.1	44.18 .71	68.0 1.5
	26.1	8.31 −.11	68.3 −1.1	31.08 −.52	88.3 −2.1	24.76 −.15	56.5 −1.5	43.51 .64	66.2 −2.0
Nov	5.1	8.21 .07	67.1 1.4	30.59 .44	86.0 2.5	24.63 .11	54.8 1.9	42.90 .56	64.0 2.4
	15.1	8.16 −.03	65.6 1.6	30.19 .35	83.3 2.9	24.54 .07	52.8 2.2	42.39 .45	61.3 2.8
	25.1	8.16 +.02	63.9 1.8	29.89 .25	80.3 3.2	24.50 −.02	50.5 2.4	41.99 .34	58.3 3.2
Dec	5.0	8.20 .07	62.0 2.0	29.69 .14	76.9 3.4	24.51 +.03	47.9 2.6	41.72 .21	55.0 3.4
	15.0	8.29 +.11	59.9 −2.1	29.61 −.02	73.4 −3.6	24.57 +.08	45.2 −2.8	41.58 −.07	51.5 −3.6
	25.0	8.43 .15	57.7 2.2	29.65 +.10	69.8 3.6	24.67 .13	42.3 2.8	41.58 +.07	47.9 3.6
	35.0	8.60 +.19	55.5 −2.2	29.80 +.21	66.2 −3.6	24.83 +.18	39.5 −2.8	41.72 +.21	44.3 3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis.		γ^2 Sagittarii.		μ Sagittarii.		η Serpentis.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *South*.
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	17 54	+51 29	17 59	−30 25	18 7	−21 5	18 15	− 2 55
	s	″	s	″	s	″	s	″
Jan. 1.0	9.54 +.13	51.7 −3.5	6.60 +.20	38.3 +0.3	31.70 +.18	17.3 −0.2	54.79 +.15	40.5 −1.2
11.0	9.71 .20	48.2 3.3	6.83 .24	38.0 0.3	31.90 .22	17.5 0.2	54.97 .19	41.8 1.2
20.9	9.94 .26	45.0 3.1	7.09 .28	37.8 0.2	32.14 .25	17.7 0.2	55.17 .22	43.0 1.2
30.9	10.22 .30	42.0 2.7	7.39 .31	37.6 0.2	32.41 .28	18.0 0.2	55.40 .25	44.1 1.1
Feb. 9.9	10.55 .34	39.5 2.3	7.70 .33	37.4 0.1	32.69 .30	18.2 0.2	55.66 .27	45.1 0.9
19.8	10.91 +.38	37.5 −1.7	8.04 +.34	37.4 +0.1	33.00 +.31	18.3 −0.1	55.94 +.28	45.9 −0.7
29.8	11.30 .40	36.1 1.1	8.39 .35	37.3 0.0	33.32 .32	18.4 −0.1	56.22 .29	46.5 0.4
Mar. 10.8	11.71 .40	35.3 −0.5	8.74 .35	37.3 0.0	33.64 .33	18.5 0.0	56.52 .29	46.8 −0.2
20.8	12.11 .40	35.1 +0.2	9.10 .35	37.2 0.0	33.97 .33	18.4 +0.1	56.82 .30	46.9 +0.1
30.7	12.52 .40	35.6 0.8	9.45 .35	37.2 0.0	34.30 .33	18.3 0.2	57.12 .30	46.6 0.4
Apr. 9.7	12.90 +.38	36.8 +1.4	9.80 +.34	37.2 0.0	34.62 +.32	18.0 +0.2	57.42 +.29	46.1 +0.6
19.7	13.27 .35	38.4 1.9	10.13 .33	37.2 0.0	34.94 .31	17.7 0.3	57.71 .28	45.4 0.8
29.6	13.60 .31	40.6 2.4	10.45 .31	37.3 −0.1	35.24 .29	17.4 0.4	57.99 .27	44.4 1.0
May 9.6	13.90 .27	43.3 2.8	10.76 .29	37.4 0.1	35.53 .27	17.0 0.4	58.25 .25	43.3 1.2
19.6	14.14 .22	46.2 3.1	11.03 .26	37.5 0.2	35.79 .25	16.6 0.4	58.50 .23	42.1 1.2
29.6	14.34 +.17	49.4 +3.2	11.28 +.23	37.7 −0.2	36.02 +.22	16.3 +0.3	58.72 +.20	40.8 +1.3
June 8.5	14.49 .11	52.7 3.3	11.49 .19	38.0 0.3	36.23 .19	16.0 0.3	58.91 .17	39.5 1.3
18.5	14.57 +.05	56.0 3.3	11.67 .15	38.3 0.3	36.40 .15	15.7 0.2	59.06 .14	38.2 1.3
28.5	14.59 −.01	59.3 3.2	11.80 .11	38.7 0.4	36.53 .11	15.5 0.1	59.18 .10	36.9 1.2
July 8.4	14.56 .07	62.4 3.0	11.88 .06	39.1 0.4	36.61 .07	15.4 +0.1	59.26 .06	35.8 1.1
18.4	14.46 −.12	65.3 +2.8	11.92 +.01	39.6 −0.5	36.66 +.02	15.4 0.0	59.30 +.02	34.7 +1.0
28.4	14.31 .18	67.9 2.5	11.91 −.03	40.1 0.5	36.65 −.02	15.3 0.0	59.30 −.02	33.8 0.9
Aug. 7.4	14.11 .23	70.2 2.1	11.85 .08	40.5 0.4	36.61 .06	15.4 0.0	59.25 .06	33.0 0.7
17.3	13.86 .27	72.1 1.7	11.75 .12	40.9 0.4	36.53 .10	15.4 −0.1	59.17 .10	32.4 0.6
27.3	13.57 .30	73.6 1.2	11.62 .15	41.2 0.3	36.41 .13	15.5 −0.1	59.06 .13	31.9 0.4
Sept. 6.3	13.25 −.33	74.5 +0.7	11.46 −.17	41.4 −0.2	36.26 −.16	15.5 0.0	58.92 −.15	31.5 +0.3
16.3	12.92 .34	75.0 +0.3	11.28 .18	41.5 0.0	36.10 .17	15.5 0.0	58.76 .16	31.3 +0.1
26.2	12.57 .34	75.0 −0.3	11.09 .18	41.5 +0.1	35.92 .17	15.5 0.0	58.60 .16	31.3 0.0
Oct. 6.2	12.24 .33	74.5 0.8	10.91 .18	41.3 0.2	35.75 .16	15.5 +0.1	58.43 .16	31.4 −0.2
16.2	11.91 .31	73.5 1.3	10.74 .16	41.0 0.3	35.60 .15	15.4 0.1	58.28 .15	31.6 0.3
26.2	11.62 −.27	72.0 −1.8	10.60 −.12	40.6 +0.4	35.46 −.12	15.2 +0.1	58.14 −.12	32.0 −0.5
Nov. 5.1	11.37 .23	70.0 2.2	10.49 .08	40.1 0.5	35.36 .08	15.1 0.1	58.04 .09	32.5 0.6
15.1	11.17 .17	67.6 2.6	10.43 −.04	39.5 0.6	35.30 −.04	15.0 0.1	57.96 .05	33.2 0.8
25.1	11.02 .11	64.8 3.0	10.42 +.02	38.9 0.6	35.28 +.01	14.9 +0.1	57.93 −.01	34.0 0.9
Dec. 5.0	10.95 −.04	61.7 3.2	10.46 .07	38.3 0.6	35.32 .06	14.8 0.0	57.95 +.04	35.0 1.0
15.0	10.94 +.02	58.3 −3.4	10.56 +.12	37.8 +0.5	35.40 +.11	14.8 0.0	58.01 +.08	36.1 −1.1
25.0	10.99 .09	54.9 3.5	10.71 .17	37.3 0.5	35.53 .15	14.9 −0.1	58.11 .12	37.2 1.2
35.0	11.12 +.15	51.4 −3.5	10.90 +.21	36.9 +0.3	35.70 +.19	15.0 −0.2	58.26 +.16	38.5 +1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Aquilæ.		α Lyræ. (*Vega.*)		β Lyræ.		σ Sagittarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 18 29	° ′ − 8 19	h m 18 33	° ′ +38 40	h m 18 46	° ′ +33 14	h m 18 48	° ′ −26 25
	s	″	s	″	s	″	s	″
1. 1.0	31.97 +.14	9.3 −0.9	23.55 +.10	63.5 −3.1	13.05 +.09	22.4 −2.9	48.08 +.14	41.6 +0.3
11.0	32.14 .18	10.1 0.9	23.67 .14	60.4 3.0	13.16 .13	19.5 2.9	48.24 .18	41.3 0.3
20.9	32.33 .21	11.0 0.8	23.84 .19	57.4 2.9	13.32 .18	16.7 2.7	48.45 .22	41.0 0.3
30.9	32.56 .24	11.8 0.7	24.05 .23	54.6 2.6	13.51 .22	14.0 2.5	48.69 .25	40.6 0.3
b. 9.9	32.82 .26	12.5 0.6	24.30 .27	52.1 2.3	13.75 .25	11.7 2.2	48.95 .28	40.3 0.3
19.9	33.09 +.28	13.0 −0.5	24.59 +.30	50.1 −1.8	14.01 +.28	9.7 −1.8	49.24 +.30	40.0 +0.4
29.8	33.37 .29	13.4 −0.3	24.89 .32	48.5 1.3	14.30 .30	8.1 1.3	49.55 .32	39.6 0.4
ır. 10.8	33.67 .30	13.5 0.0	25.22 .33	47.5 0.7	14.61 .31	7.1 0.7	49.88 .33	39.2 0.4
20.8	33.98 .31	13.5 +0.2	25.56 .34	47.0 −0.1	14.92 .32	6.6 −0.2	50.21 .34	38.8 0.5
30.8	34.28 .31	13.2 0.4	25.91 .34	47.2 +0.5	15.25 .33	6.8 +0.4	50.55 .34	38.3 0.5
r. 9.7	34.59 +.30	12.7 +0.6	26.25 +.34	47.9 +1.1	15.58 +.33	7.4 +0.9	50.89 +.34	37.8 +0.5
19.7	34.89 .30	12.0 0.8	26.58 .32	49.3 1.6	15.90 .32	8.6 1.4	51.23 .34	37.3 0.5
29.7	35.18 .29	11.1 0.9	26.90 .30	51.1 2.0	16.21 .30	10.3 1.9	51.56 .33	36.8 0.5
y 9.6	35.46 .27	10.2 1.0	27.19 .28	53.3 2.4	16.51 .28	12.4 2.3	51.88 .31	36.3 0.4
19.6	35.72 .25	9.1 1.1	27.46 .25	55.9 2.7	16.77 .25	14.8 2.7	52.19 .29	35.9 0.4
29.6	35.96 +.22	8.0 +1.1	27.69 +.21	58.8 +2.9	17.01 +.22	17.5 +2.8	52.47 +.26	35.6 +0.3
ıe 8.6	36.16 .19	6.9 1.1	27.88 .17	61.8 3.1	17.22 .18	20.4 2.9	52.72 .23	35.3 0.2
18.5	36.34 .15	5.8 1.0	28.03 .12	65.0 3.1	17.38 .14	23.3 3.0	52.93 .19	35.2 +0.1
28.5	36.48 .12	4.8 0.9	28.13 .07	68.1 3.1	17.50 .10	26.4 2.9	53.11 .15	35.2 0.0
y 8.5	36.58 .08	3.9 0.8	28.18 +.02	71.1 3.0	17.57 +.05	29.3 2.8	53.24 .11	35.3 −0.1
18.5	36.63 +.03	3.1 +0.7	28.18 −.03	74.0 +2.8	17.59 .00	32.1 +2.7	53.32 +.06	35.5 −0.2
28.4	36.64 −.01	2.5 0.6	28.12 .08	76.7 2.6	17.57 −.05	34.7 2.5	53.36 +.01	35.7 0.3
g. 7.4	36.61 .05	1.9 0.5	28.03 .12	79.1 2.3	17.50 .09	37.0 2.2	53.35 −.03	36.0 0.3
17.4	36.54 .08	1.4 0.4	27.88 .16	81.2 1.9	17.38 .13	39.1 1.9	53.29 .08	36.4 0.4
27.3	36.44 .12	1.1 0.3	27.70 .20	83.0 1.5	17.23 .17	40.8 1.5	53.19 .12	36.7 0.3
ıt. 6.3	36.31 −.14	0.9 +0.2	27.49 −.23	84.3 +1.1	17.05 −.20	42.2 +1.1	53.06 −.15	37.1 −0.3
16.3	36.16 .16	0.7 +0.1	27.25 .24	85.2 0.7	16.84 .22	43.1 0.7	52.90 .17	37.3 0.2
26.3	35.99 .16	0.7 0.0	27.00 .25	85.7 +0.2	16.61 .23	43.7 +0.3	52.73 .18	37.5 0.1
t. 6.2	35.83 .16	0.8 −0.1	26.74 .25	85.7 −0.2	16.39 .23	43.8 −0.1	52.55 .18	37.6 −0.1
16.2	35.67 .15	0.9 0.2	26.50 .24	85.2 0.7	16.16 .22	43.4 0.5	52.37 .17	37.6 0.0
26.2	35.53 −.12	1.1 −0.3	26.27 −.21	84.3 −1.2	15.95 −.20	42.7 −1.0	52.22 −.14	37.5 +0.1
v. 5.2	35.42 .09	1.5 0.4	26.07 .18	82.9 1.6	15.77 .17	41.5 1.4	52.09 .11	37.3 0.2
15.1	35.35 .06	1.9 0.5	25.91 .14	81.1 2.0	15.62 .13	39.9 1.8	51.99 .07	37.1 0.3
25.1	35.31 −.01	2.4 0.6	25.79 .10	78.9 2.4	15.50 .09	37.9 2.1	51.94 −.03	36.8 0.3
:. 5.1	35.32 +.03	3.1 0.7	25.72 −.04	76.3 2.7	15.44 −.04	35.6 2.4	51.93 +.02	36.4 0.4
15.0	35.37 +.07	3.8 −0.8	25.70 +.01	73.5 −2.9	15.42 +.01	33.0 −2.7	51.97 +.07	36.0 +0.4
25.0	35.47 .12	4.6 0.8	25.73 .06	70.5 3.0	15.45 .06	30.2 2.8	52.06 .11	35.7 0.4
35.0	35.60 +.16	5.5 −0.9	25.82 +.11	67.4 −3.1	15.53 +.10	27.4 −2.9	52.20 +.15	35.3 +0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	50 Draconis.		σ Octantis.		ζ Aquilæ.		d Sagittarii.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.
	h m 18 49	° ′ +75 18	h 18	° ′ −89 15	h m 19 0	° ′ +13 42	h m 19 11	° ′ −19 8
	s	″	m s	″	s	″	s	″
Jan. 1.0	37.53 −.10	33.9 −3.4	51 32.2+ 3.9	44.7 +3.5	36.78 +.09	24.2 −2.0	32.14 +.11	25.2 0.0
11.0	37.53 +.08	30.4 3.4	51 37.6 6.9	41.2 3.3	36.90 .13	22.2 2.0	32.27 .15	25.2 0.0
20.9	37.69 .25	27.0 3.4	51 46.1 9.9	37.9 3.2	37.05 .17	20.2 1.9	32.44 .19	25.2 0.0
30.9	38.02 .40	23.7 3.1	51 57.3 12.5	34.9 2.9	37.23 .20	18.4 1.7	32.65 .22	25.2 0.0
Feb. 9.9	38.49 .54	20.7 2.8	52 11.1 14.8	32.1 2.6	37.44 .23	16.8 1.5	32.88 .25	25.2 +0.1
19.9	39.10 +.66	18.2 −2.3	52 27.0+16.7	29.6 +2.2	37.68 +.25	15.4 −1.2	33.14 +.27	25.0 +0.2
29.9	39.81 .76	16.1 1.8	52 44.5 18.2	27.6 1.8	37.94 .27	14.3 0.8	33.41 .29	24.8 0.3
Mar. 10.8	40.61 .84	14.6 1.2	53 3.3 19.2	26.0 1.4	38.22 .28	13.7 −0.4	33.71 .30	24.4 0.4
20.8	41.47 .87	13.8 −0.5	53 22.9 19.8	24.9 0.9	38.51 .29	13.5 0.0	34.02 .31	23.9 0.5
30.8	42.35 .88	13.6 +0.1	53 42.9 20.0	24.2 +0.4	38.81 .30	13.7 +0.4	34.34 .32	23.3 0.6
Apr. 9.7	43.22 +.86	14.1 +0.8	54 3.0+19.8	24.1 −0.1	39.11 +.30	14.3 +0.8	34.66 +.32	22.6 +0.7
19.7	44.07 .82	15.2 1.4	54 22.6 19.2	24.4 0.6	39.41 .30	15.3 1.2	34.98 .32	21.8 0.8
29.7	44.85 .74	16.9 2.0	54 41.4 18.2	25.2 1.0	39.71 .29	16.7 1.5	35.31 .32	21.0 0.8
May 9.7	45.56 .65	19.1 2.4	54 59.0 16.9	26.5 1.5	39.99 .28	18.3 1.8	35.62 .31	20.2 0.8
19.6	46.16 .54	21.8 2.8	55 15.1 15.1	28.2 1.8	40.26 .26	20.3 2.0	35.92 .29	19.3 0.8
29.6	46.64 +.41	24.8 +3.1	55 29.3+13.1	30.2 −2.2	40.50 +.23	22.4 +2.2	36.20 +.27	18.5 +0.8
June 8.6	46.98 .28	28.0 3.3	55 41.3 10.7	32.6 2.5	40.72 .20	24.6 2.2	36.46 .24	17.7 0.7
18.6	47.19 +.13	31.5 3.5	55 50.8 8.1	35.2 2.7	40.90 .17	26.9 2.3	36.68 .21	17.1 0.6
28.5	47.25 −.02	35.0 3.5	55 57.6 5.4	38.0 2.9	41.05 .13	29.1 2.2	36.87 .17	16.6 0.5
July 8.5	47.16 .16	38.5 3.4	56 1.5+ 2.4	41.0 3.0	41.16 .09	31.3 2.1	37.01 .12	16.1 0.4
18.5	46.92 −.31	41.8 +3.3	56 2.4− 0.6	44.0 −2.9	41.22 +.04	33.4 +2.0	37.11 +.08	15.8 +0.2
28.4	46.54 .44	45.0 3.1	56 0.4 3.5	46.9 2.8	41.24 .00	35.3 1.8	37.17 +.03	15.7 +0.1
Aug. 7.4	46.03 .57	48.0 2.8	55 55.4 6.4	49.7 2.6	41.22 −.04	36.9 1.6	37.18 −.01	15.6 0.0
17.4	45.41 .68	50.6 2.5	55 47.5 9.1	52.2 2.3	41.15 .08	38.4 1.3	37.14 .06	15.6 −0.1
27.4	44.67 .78	52.9 2.1	55 37.2 11.4	54.4 2.0	41.05 .12	39.6 1.1	37.06 .10	15.7 0.1
Sept. 6.3	43.85 −.85	54.7 +1.6	55 24.8−13.3	56.1 −1.5	40.92 −.14	40.6 +0.8	36.95 −.13	15.9 −0.2
16.3	42.97 .91	56.1 1.1	55 10.6 14.8	57.4 1.0	40.77 .16	41.3 0.5	36.81 .15	16.0 0.2
26.3	42.04 .94	57.0 0.6	54 55.2 15.7	58.1 −0.4	40.60 .17	41.7 +0.2	36.65 .16	16.2 0.2
Oct. 6.2	41.09 .95	57.4 +0.1	54 39.2 15.9	58.2 +0.2	40.42 .18	41.8 0.0	36.49 .17	16.4 0.2
16.2	40.14 .94	57.2 −0.4	54 23.3 15.5	57.7 0.8	40.24 .17	41.6 −0.3	36.32 .16	16.5 0.1
26.2	39.22 −.90	56.6 −1.0	54 8.1−14.5	56.6 +1.4	40.08 −.15	41.1 −0.6	36.16 −.14	16.6 −0.1
Nov. 5.2	38.35 .83	55.3 1.5	53 54.3 12.8	54.9 1.9	39.94 .13	40.3 0.9	36.03 .12	16.7 0.1
15.1	37.56 .74	53.6 2.0	53 42.4 10.6	52.7 2.4	39.83 .10	39.2 1.2	35.93 .09	16.7 0.1
25.1	36.87 .63	51.3 2.5	53 33.0 8.0	50.0 2.8	39.75 .06	37.9 1.4	35.86 −.05	16.8 −0.1
Dec. 5.1	36.31 .49	48.7 2.8	53 26.4 5.0	47.0 3.2	39.71 −.02	36.3 1.7	35.84 .00	16.8 0.0
15.1	35.89 −.35	45.7 −3.1	53 23.0− 1.8	43.7 +3.4	39.71 +.02	34.6 −1.8	35.86 +.04	16.8 0.0
25.0	35.62 .19	42.4 3.3	53 22.8+ 1.5	40.3 3.5	39.76 .07	32.7 1.9	35.92 .08	16.9 0.0
35.0	35.51 −.05	39.0 −3.4	53 26.0+ 4.8	36.8 +3.5	39.85 +.10	30.7 −2.0	36.02 +.12	16.9 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Draconis.		τ Draconis.		δ Aquilæ.		κ Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 19 12	° ′ +67 28	h m 19 17	° ′ +73 9	h m 19 20	° ′ + 2 54	h m 19 31	° ′ − 7 15
	s	″	s	″	s	″	s	″
Jan. 1.0	28.01 −.07	38.4 −3.4	27.94 −.15	40.8 −3.3	14.37 +.08	19.2 −1.3	16.94 +.08	38.9 −0.7
11.0	28.00 +.04	35.0 3.5	27.87 −.01	37.3 3.4	14.47 .12	17.8 1.3	17.04 .12	39.6 0.7
21.0	28.09 .15	31.5 3.4	27.94 +.14	33.9 3.4	14.61 .16	16.5 1.3	17.18 .15	40.3 0.6
30.9	28.29 .25	28.2 3.2	28.15 .28	30.5 3.2	14.79 .19	15.3 1.2	17.35 .18	40.9 0.6
Feb. 9.9	28.59 .35	25.1 2.9	28.50 .41	27.4 2.9	14.99 .22	14.2 1.0	17.55 .21	41.4 0.4
19.9	28.99 +.43	22.3 −2.5	28.96 +.52	24.6 −2.5	15.22 +.24	13.3 −0.7	17.77 +.23	41.8 −0.2
29.9	29.45 .50	20.1 2.0	29.54 .62	22.3 2.0	15.47 .26	12.7 0.5	18.02 .25	41.9 0.0
Mar. 10.8	29.98 .55	18.4 1.4	30.20 .70	20.6 1.5	15.73 .27	12.4 −0.2	18.29 .27	41.9 +0.2
20.8	30.55 .59	17.3 0.7	30.93 .75	19.4 0.9	16.01 .28	12.4 +0.2	18.57 .29	41.6 0.4
30.8	31.16 .61	16.9 −0.1	31.70 .77	18.9 −0.2	16.31 .29	12.8 0.5	18.87 .30	41.1 0.6
Apr. 9.8	31.77 +.61	17.2 +0.6	32.48 +.78	19.0 +0.5	16.61 +.30	13.4 +0.8	19.17 +.31	40.3 +0.9
19.7	32.37 .59	18.1 1.2	33.25 .75	19.8 1.1	16.91 .30	14.4 1.1	19.48 .31	39.4 1.1
29.7	32.95 .55	19.6 1.8	33.99 .72	21.2 1.7	17.21 .30	15.6 1.4	19.79 .31	38.2 1.2
May 9.7	33.48 .50	21.6 2.3	34.67 .64	23.1 2.2	17.50 .29	17.1 1.6	20.09 .30	37.0 1.3
19.6	33.96 .44	24.1 2.7	35.27 .56	25.6 2.6	17.78 .27	18.7 1.7	20.39 .29	35.6 1.4
29.6	34.36 +.37	27.0 +3.1	35.78 +.45	28.4 +3.0	18.05 +.25	20.4 +1.8	20.66 +.27	34.2 +1.4
June 8.6	34.69 .29	30.3 3.3	36.18 .34	31.6 3.3	18.28 .22	22.3 1.8	20.92 .24	32.8 1.4
18.6	34.92 .19	33.7 3.5	36.46 .22	35.0 3.5	18.49 .19	24.1 1.8	21.14 .21	31.4 1.3
28.5	35.06 +.09	37.3 3.6	36.62 +.09	38.5 3.6	18.66 .16	25.9 1.7	21.33 .17	30.2 1.2
July 8.5	35.10 −.01	40.8 3.6	36.65 −.04	42.1 3.6	18.80 .12	27.5 1.6	21.48 .13	29.0 1.1
18.5	35.04 −.11	44.4 +3.5	36.54 −.17	45.6 +3.5	18.89 +.07	29.1 +1.5	21.59 +.09	27.9 +1.0
28.5	34.89 .20	47.8 3.3	36.31 .29	49.1 3.3	18.94 +.03	30.5 1.3	21.66 +.04	27.1 0.8
Aug. 7.4	34.64 .29	50.9 3.0	35.96 .41	52.3 3.1	18.95 −.01	31.8 1.2	21.68 .00	26.3 0.7
17.4	34.30 .38	53.8 2.7	35.49 .51	55.2 2.8	18.91 .06	32.9 1.0	21.66 −.04	25.7 0.5
27.4	33.89 .45	56.3 2.3	34.93 .60	57.8 2.4	18.83 .09	33.8 0.8	21.60 .08	25.3 0.4
Sept. 6.3	33.41 −.51	58.5 +1.9	34.28 −.69	60.0 +2.0	18.73 −.12	34.4 +0.6	21.50 −.11	25.0 +0.2
16.3	32.87 .55	60.2 1.5	33.55 .75	61.8 1.6	18.59 .14	34.9 0.4	21.37 .14	24.8 +0.1
26.3	32.30 .58	61.4 1.0	32.78 .79	63.2 1.1	18.44 .16	35.2 +0.2	21.22 .15	24.8 0.0
Oct. 6.3	31.71 .60	62.1 +0.4	31.98 .81	64.0 +0.6	18.27 .16	35.2 0.0	21.07 .16	24.8 0.1
16.2	31.11 .59	62.2 −0.1	31.16 .81	64.3 0.0	18.11 .16	35.1 −0.1	20.91 .15	25.0 0.2
26.2	30.52 −.57	61.8 −0.7	30.35 −.79	64.0 0.5	17.96 −.14	34.8 −0.4	20.76 −.14	25.3 −0.3
Nov. 5.2	29.97 .53	60.9 1.2	29.58 .74	63.2 1.1	17.82 .12	34.2 0.6	20.62 .12	25.6 0.4
15.2	29.46 .48	59.4 1.7	28.87 .68	61.8 1.6	17.71 .09	33.6 0.8	20.51 .09	26.0 0.5
25.1	29.01 .40	57.4 2.2	28.23 .59	59.9 2.1	17.64 .06	32.7 1.0	20.43 .06	26.5 0.5
Dec. 5.1	28.64 .32	55.0 2.6	27.69 .48	57.6 2.6	17.60 −.02	31.6 1.1	20.39 −.02	27.1 0.6
15.1	28.36 −.23	52.1 −3.0	27.26 −.36	54.8 −2.9	17.60 +.02	30.5 −1.2	20.39 +.02	27.7 −0.7
25.0	28.18 .13	49.0 3.3	26.96 .24	51.7 3.2	17.64 .06	29.2 1.3	20.42 .06	28.4 0.7
35.0	28.11 −.03	45.6 −3.5	26.78 −.11	48.4 3.4	17.72 +.10	27.9 −1.3	20.50 +.09	29.1 0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Aquilæ. (*Altair.*)		ε Draconis.		β Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 19 41	° ′ +10 21	h m 19 45	° ′ + 8 35	h m 19 48	° ′ +69 59	h m 19 50	° ′ + 6 8
	s	″	s	″	s	″	s	″
Jan. 1.0	17.97 +.06	29.0 −1.7	41.62 +.05	30.7 −1.6	26.89 −.19	70.5 −3.2	11.38 +.05	42.6 −1.4
11.0	18.04 .10	27.3 1.7	41.70 .09	29.1 1.6	26.76 −.06	67.2 3.3	11.46 .09	41.2 1.4
21.0	18.16 .13	25.7 1.6	41.81 .13	27.5 1.6	26.76 +.05	63.8 3.4	11.57 .13	39.7 1.4
31.0	18.30 .16	24.1 1.5	41.95 .16	26.1 1.5	26.87 .17	60.4 3.3	11.71 .16	38.4 1.3
Feb. 9.9	18.48 .19	22.6 1.3	42.13 .19	24.8 1.3	27.10 .29	57.2 3.1	11.88 .19	37.2 1.1
19.9	18.69 +.22	21.4 −1.1	42.33 +.22	23.7 −1.0	27.44 +.39	54.2 −2.8	12.08 +.21	36.2 −0.9
29.9	18.92 .24	20.5 0.7	42.56 .24	22.8 0.7	27.88 .48	51.7 2.3	12.31 .24	35.5 0.6
Mar. 10.9	19.18 .26	20.0 −0.4	42.82 .26	22.3 −0.4	28.41 .56	49.6 1.8	12.56 .26	35.0 −0.3
20.8	19.45 .28	19.8 0.0	43.09 .28	22.2 0.0	29.00 .62	48.1 1.2	12.82 .28	35.0 +0.1
30.8	19.73 .29	20.0 +0.4	43.37 .29	22.5 +0.4	29.64 .66	47.3 −0.6	13.10 .29	35.2 0.4
Apr. 9.8	20.03 +.30	20.6 +0.8	43.67 +.30	23.1 +0.7	30.31 +.67	47.0 +0.1	13.40 +.30	35.8 +0.8
19.8	20.33 .30	21.5 1.1	43.97 .30	24.1 1.1	30.98 .67	47.4 0.7	13.70 .30	36.8 1.1
29.7	20.64 .30	22.8 1.4	44.28 .30	25.4 1.4	31.65 .65	48.5 1.3	14.00 .30	38.1 1.4
May 9.7	20.94 .29	24.4 1.7	44.58 .30	26.9 1.6	32.28 .61	50.2 1.9	14.31 .30	39.6 1.6
19.7	21.23 .28	26.2 1.9	44.87 .29	28.7 1.8	32.86 .55	52.3 2.4	14.60 .29	41.3 1.8
29.6	21.50 +.26	28.3 +2.1	45.15 +.27	30.7 +2.0	33.38 +.47	55.0 +2.8	14.88 +.27	43.2 +1.9
June 8.6	21.75 .23	30.4 2.2	45.40 .24	32.8 2.1	33.81 .39	58.0 3.2	15.13 .24	45.2 2.0
18.6	21.97 .20	32.6 2.2	45.63 .21	34.9 2.1	34.15 .29	61.3 3.4	15.36 .21	47.2 2.0
28.6	22.15 .17	34.8 2.2	45.82 .18	37.1 2.0	34.39 .18	64.8 3.5	15.56 .18	49.2 2.0
July 8.5	22.30 .13	36.9 2.1	45.97 .14	39.1 2.0	34.52 +.08	68.4 3.6	15.72 .14	51.2 1.9
18.5	22.41 +.08	39.0 +2.0	46.08 +.09	41.1 +1.9	34.54 −.03	72.1 +3.6	15.84 +.10	53.0 +1.7
28.5	22.47 +.04	40.8 1.8	46.15 .05	42.9 1.7	34.45 .14	75.6 3.5	15.91 .05	54.7 1.6
Aug. 7.4	22.48 .00	42.5 1.6	46.17 +.01	44.5 1.5	34.25 .25	79.1 3.3	15.94 +.01	56.2 1.4
17.4	22.46 −.04	44.0 1.4	46.15 −.04	46.0 1.3	33.95 .35	82.3 3.1	15.92 −.04	57.5 1.2
27.4	22.39 .08	45.3 1.1	46.09 .08	47.2 1.1	33.56 .44	85.2 2.8	15.87 −.07	58.5 1.0
Sept. 6.4	22.29 −.12	46.3 +0.9	46.00 −.11	48.2 +0.8	33.08 −.51	87.8 +2.4	15.78 −.10	59.4 +0.8
16.3	22.16 .14	47.1 0.6	45.87 .13	48.9 0.6	32.54 .57	90.0 2.0	15.66 .13	60.1 0.5
26.3	22.01 .16	47.6 0.4	45.73 .15	49.4 0.3	31.94 .62	91.8 1.5	15.51 .15	60.5 0.3
Oct. 6.3	21.84 .17	47.8 +0.1	45.57 .16	49.6 +0.1	31.30 .65	93.1 1.0	15.35 .16	60.6 +0.1
16.3	21.68 .16	47.8 −0.2	45.40 .16	49.6 −0.2	30.64 .66	93.8 +0.5	15.19 .16	60.6 −0.2
26.2	21.52 −.15	47.5 −0.4	45.24 −.15	49.4 −0.4	29.97 −.66	94.0 −0.1	15.04 −.15	60.3 −0.4
Nov. 5.2	21.37 .14	47.0 0.7	45.10 .13	48.9 0.6	29.32 .63	93.6 0.6	14.89 .13	59.9 0.6
15.2	21.24 .11	46.2 0.9	44.98 .11	48.1 0.9	28.71 .59	92.7 1.2	14.77 .11	59.2 0.8
25.2	21.14 .08	45.2 1.1	44.88 .08	47.2 1.1	28.15 .52	91.2 1.7	14.67 .08	58.3 1.0
Dec. 5.1	21.08 .04	43.9 1.3	44.82 .04	46.0 1.3	27.66 .45	89.2 2.2	14.61 .05	57.2 1.2
15.1	21.06 −.01	42.5 −1.5	44.79 −.01	44.7 −1.4	27.26 −.35	86.8 −2.7	14.58 −.01	56.0 −1.3
25.1	21.07 +.03	40.9 1.6	44.80 +.03	43.3 1.5	26.96 .25	83.9 3.0	14.59 +.03	54.6 1.4
35.1	21.12 +.07	39.3 −1.7	44.85 +.07	41.7 −1.6	26.76 −.15	80.8 −3.2	14.64 +.06	53.2 −1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Aquilæ.		κ Cephei.		α^2 Capricorni.		α Pavonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension	Declination *South.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	19 59	+ 6 58	20 12	+77 23	20 12	−12 51	20 17	−57 3
	s	″	s	″	s	″	s	″
Jan. 1.1	2.73 +.04	57.9 −1.4	16.09− .45	56.0 −2.9	16.34 +.05	69.8 −0.3	24.55 +.03	77.4 +2.2
11.0	2.80 .08	56.5 1.4	15.72 .27	52.9 3.2	16.41 .08	70.1 0.2	24.61 .10	75.1 2.4
21.0	2.90 .12	55.0 1.4	15.55− .08	49.6 3.3	16.51 .12	70.3 0.1	24.75 .17	72.7 2.5
31.0	3.03 .15	53.7 1.3	15.56+ .11	46.3 3.3	16.64 .15	70.4 −0.1	24.95 .23	70.2 2.5
Feb. 10.0	3.19 .18	52.4 1.1	15.76 .30	43.0 3.2	16.81 .18	70.5 0.0	25.21 .29	67.7 2.5
19.9	3.39 +.21	51.4 −0.9	16.15+ .47	39.9 2.9	17.00 +.21	70.4 +0.2	25.52 +.34	65.3 +2.4
29.9	3.60 .23	50.7 0.6	16.71 .63	37.2 2.5	17.23 .23	70.1 0.4	25.89 .38	62.9 2.3
Mar. 10.9	3.85 .25	50.2 −0.3	17.41 .77	34.8 2.1	17.47 .25	69.7 0.5	26.29 .43	60.7 2.1
20.8	4.11 .27	50.1 +0.1	18.24 .88	33.0 1.5	17.74 .27	69.0 0.7	26.74 .47	58.7 1.9
30.8	4.39 .29	50.4 0.5	19.17 .96	31.8 0.9	18.02 .29	68.2 0.9	27.22 .49	56.9 1.7
Apr. 9.8	4.68 +.30	51.0 +0.8	20.16+1.00	31.2 −0.3	18.32 +.31	67.2 +1.1	27.72 +.51	55.4 +1.4
19.8	4.98 .30	52.0 1.1	21.17 1.01	31.2 +0.3	18.64 .32	66.1 1.2	28.24 .53	54.1 1.1
29.7	5.29 .31	53.3 1.4	22.18 .99	31.9 1.0	18.95 .32	64.8 1.3	28.77 .53	53.1 0.8
May 9.7	5.59 .30	54.8 1.7	23.15 .94	33.2 1.6	19.27 .32	63.5 1.4	29.30 .52	52.5 0.5
19.7	5.89 .29	56.6 1.9	24.06 .86	35.0 2.1	19.59 .31	62.1 1.4	29.82 .51	52.2 +0.1
29.7	6.17 +.27	58.5 +2.0	24.87+ .75	37.3 +2.5	19.89 +.29	60.7 +1.4	30.32 +.48	52.3 −0.2
June 8.6	6.43 .25	60.6 2.1	25.56 .62	40.1 2.9	20.18 .27	59.4 1.3	30.79 .44	52.7 0.6
18.6	6.67 .22	62.7 2.1	26.11 .48	43.2 3.2	20.44 .24	58.1 1.2	31.21 .40	53.4 0.9
28.6	6.87 .18	64.7 2.0	26.51 .32	46.6 3.4	20.67 .21	57.0 1.1	31.59 .34	54.5 1.2
July 8.5	7.04 .14	66.7 1.9	26.75+ .15	50.1 3.6	20.86 .17	56.0 0.9	31.90 .28	55.8 1.5
18.5	7.16 +.10	68.6 +1.8	26.82− .01	53.7 +3.6	21.02 +.13	55.2 +0.8	32.14 +.21	57.4 −1.7
28.5	7.24 .06	70.4 1.7	26.72 .18	57.4 3.6	21.12 .08	54.5 0.6	32.31 .13	59.2 1.8
Aug. 7.5	7.28 +.01	72.0 1.5	26.46 .34	60.9 3.5	21.19 +.04	54.0 0.4	32.40 +.05	61.1 1.9
17.4	7.27 −.03	73.4 1.3	26.03 .50	64.4 3.3	21.20 .01	53.6 0.3	32.41 −.03	63.1 1.9
27.4	7.22 .07	74.5 1.1	25.46 .64	67.5 3.0	21.17 .05	53.4 +0.1	32.34 .10	65.0 1.9
Sept. 6.4	7.14 −.10	75.5 +0.8	24.76− .76	70.4 +2.7	21.10 .08	53.4 0.0	32.20 −.17	66.8 −1.7
16.4	7.02 .13	76.2 0.6	23.93 .87	73.0 2.4	21.00 .12	53.4 −0.1	32.00 .23	68.4 1.5
26.3	6.88 .15	76.7 0.4	23.02 .96	75.1 1.9	20.87 .14	53.6 0.2	31.75 .27	69.8 1.2
Oct. 6.3	6.73 .16	76.9 +0.1	22.02 1.02	76.8 1.4	20.73 .15	53.8 0.2	31.46 .30	70.9 0.9
16.3	6.57 .16	76.9 −0.1	20.97 1.06	78.1 0.9	20.57 .15	54.0 0.3	31.15 .31	71.6 0.5
26.2	6.41 −.15	76.7 −0.3	19.90 1.07	78.7 +0.4	20.42 −.15	54.3 0.3	30.84 .31	71.9 0.1
Nov. 5.2	6.26 .14	76.3 0.6	18.84 1.05	78.8 0.2	20.28 .13	54.7 0.3	30.54 .29	71.7 +0.4
15.2	6.13 .11	75.6 0.8	17.80 1.00	78.4 0.7	20.15 .11	55.0 0.3	30.26 .25	71.2 0.8
25.2	6.03 .08	74.7 1.0	16.83 .91	77.3 1.3	20.05 .08	55.3 0.3	30.03 .21	70.2 1.2
Dec. 5.1	5.97 .05	73.7 1.1	15.95 .83	75.8 1.8	19.98 .05	55.6 0.3	29.85 .15	68.8 1.5
15.1	5.93 −.02	72.5 −1.3	15.18 .70	73.7 2.3	19.95 .01	56.0 −0.3	29.73 .08	67.1 +1.8
25.1	5.93 +.02	71.1 1.4	14.55 .55	71.1 2.7	19.96 +.02	56.3 0.3	29.68 .02	65.1 2.1
35.1	5.97 +.05	69.7 −1.4	14.08 −.40	68.2 3.1	20.00 +.06	56.6 0.3	29.70 +.05	62.9 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		γ Cygni.		π Capricorni.		ε Delphini.		Groombridge 3241.	
		Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
		h m 20 18	° ′ +39 55	h m 20 21	° ′ −18 33	h m 20 28	° ′ +10 56	h m 20 30	° ′ +72 10
		s	″	s	″	s	″	s	″
Jan.	1.1	28.32 −.03	24.8 −2.6	21.46 +.04	18.3 +0.1	13.82 +.01	55.5 −1.5	22.36 −.33	49.7 −2.8
	11.0	28.31 +.01	22.1 2.8	21.52 .08	18.2 0.1	13.85 .05	53.9 1.6	22.09 .21	46.7 3.1
	21.0	28.35 .06	19.2 2.8	21.61 .11	18.1 0.2	13.92 .08	52.4 1.5	21.95 .08	43.5 3.3
	31.0	28.44 .11	16.4 2.8	21.74 .15	17.8 0.3	14.02 .12	50.9 1.4	21.94 +.05	40.2 3.3
Feb.	10.0	28.57 .16	13.7 2.6	21.90 .18	17.5 0.4	14.15 .15	49.5 1.3	22.06 .19	36.9 3.2
	19.9	28.75 +.20	11.2 −2.3	22.10 +.21	17.0 +0.5	14.32 +.18	48.3 −1.1	22.31 +.31	33.7 −3.0
	29.9	28.97 .24	9.1 1.9	22.32 .23	16.4 0.7	14.51 .21	47.4 0.8	22.68 .43	30.9 2.6
Mar.	10.9	29.22 .27	7.4 1.4	22.56 .26	15.7 0.8	14.73 .23	46.8 0.4	23.16 .53	28.5 2.2
	20.9	29.51 .30	6.2 0.9	22.83 .28	14.8 1.0	14.97 .26	46.5 −0.1	23.74 .62	26.5 1.7
	30.8	29.83 .33	5.6 −0.4	23.12 .30	13.8 1.1	15.24 .28	46.6 +0.3	24.40 .68	25.1 1.1
Apr.	9.8	30.17 +.34	5.5 +0.2	23.42 +.31	12.6 +1.2	15.52 +.29	47.2 +0.7	25.11 +.73	24.3 −0.4
	19.8	30.52 .35	6.0 0.8	23.74 .32	11.4 1.3	15.82 .30	48.1 1.1	25.85 .74	24.2 +0.2
	29.8	30.88 .36	7.0 1.3	24.07 .33	10.1 1.3	16.13 .31	49.3 1.4	26.60 .74	24.7 0.8
May	9.7	31.23 .35	8.6 1.8	24.40 .33	8.8 1.3	16.44 .31	50.9 1.7	27.34 .72	25.9 1.4
	19.7	31.58 .34	10.7 2.2	24.73 .32	7.5 1.3	16.75 .30	52.7 1.9	28.04 .67	27.6 2.0
	29.7	31.90 +.31	13.1 +2.6	25.04 +.31	6.2 +1.2	17.04 +.29	54.7 +2.1	28.69 +.61	29.8 +2.5
June	8.6	32.20 .28	15.9 2.9	25.34 .29	5.1 1.1	17.32 .27	56.9 2.2	29.26 .52	32.5 2.9
	18.6	32.46 .24	18.9 3.1	25.62 .26	4.0 1.0	17.58 .24	59.2 2.3	29.73 .43	35.5 3.2
	28.6	32.68 .20	22.1 3.2	25.86 .23	3.1 0.8	17.80 .21	61.5 2.3	30.11 .32	38.9 3.4
July	8.6	32.86 .15	25.4 3.3	26.07 .19	2.4 0.6	17.99 .17	63.7 2.2	30.37 .20	42.4 3.6
	18.5	32.98 +.10	28.7 +3.2	26.23 +.14	1.9 +0.5	18.14 +.13	65.9 +2.1	30.51 +.08	46.1 +3.7
	28.5	33.05 +.04	31.9 3.1	26.35 .10	1.5 0.3	18.25 .08	67.9 2.0	30.53 −.04	49.8 3.7
Aug.	7.5	33.07 −.01	34.9 3.0	26.43 +.05	1.3 +0.1	18.31 +.04	69.8 1.8	30.44 .16	53.4 3.6
	17.4	33.03 .06	37.8 2.8	26.45 .00	1.3 −0.1	18.33 −.01	71.5 1.6	30.22 .27	57.0 3.4
	27.4	32.95 .11	40.4 2.5	26.44 −.04	1.4 0.2	18.30 .05	72.9 1.3	29.89 .38	60.3 3.2
Sept.	6.4	32.82 −.15	42.8 +2.1	26.37 −.08	1.6 −0.3	18.23 −.08	74.2 +1.1	29.46 −.47	63.4 +2.9
	16.4	32.65 .19	44.7 1.8	26.28 .11	1.9 0.3	18.13 .11	75.1 0.8	28.94 .56	66.1 2.5
	26.3	32.45 .21	46.3 1.4	26.15 .14	2.3 0.4	18.01 .14	75.8 0.6	28.34 .63	68.5 2.1
Oct.	6.3	32.23 .23	47.5 0.9	26.00 .15	2.6 0.4	17.86 .15	76.3 0.3	27.69 .68	70.4 1.7
	16.3	31.99 .24	48.2 +0.5	25.85 .16	3.0 0.4	17.70 .16	76.5 +0.1	26.99 .71	71.8 1.2
	26.2	31.75 −.23	48.4 0.0	25.69 −.15	3.4 −0.3	17.55 −.15	76.4 −0.2	26.27 −.72	72.6 +0.6
Nov.	5.2	31.52 .22	48.1 −0.5	25.54 .14	3.7 0.3	17.40 .14	76.0 0.5	25.54 .72	72.9 0.0
	15.2	31.31 .20	47.4 0.9	25.41 .12	3.9 0.2	17.26 .13	75.4 0.7	24.83 .69	72.7 −0.5
	25.2	31.11 .18	46.3 1.4	25.30 .09	4.1 0.2	17.14 .10	74.6 0.9	24.16 .65	71.9 1.1
Dec.	5.1	30.96 .14	44.6 1.8	25.23 .06	4.2 −0.1	17.05 .07	73.6 1.1	23.54 .58	70.5 1.7
	15.1	30.83 −.10	42.6 −2.2	25.19 −.02	4.3 0.0	17.00 −.04	72.3 −1.3	23.00 −.50	68.5 −2.2
	25.1	30.75 .06	40.3 2.5	25.18 +.02	4.3 0.0	16.97 −.01	70.9 1.5	22.55 .40	66.1 2.6
	35.1	30.72 −.02	37.7 −2.7	25.22 +.05	4.3 +0.1	16.98 +.02	69.4 −1.5	22.21 −.30	63.3 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cygni.		μ Aquarii.		12 Year Cat 1879.		ν Cygni.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 20 37	° ′ +44 54	h m 20 47	° ′ − 9 22	h m 20 52	° ′ +80 9	h m 20 53	° ′ +40 45
	s	″	s	″	s	″	s	″
Jan. 1.1	51.50 −.07	32.7 −2.6	2.05 +.01	32.0 −0.4	9.18− .78	50.8 −2.5	16.26 −.07	62.6 −2.4
11.1	51.45 −.02	30.0 2.8	2.08 .05	32.5 0.4	8.50 .57	48.1 2.9	16.21 −.02	60.1 2.6
21.0	51.46 +.03	27.1 2.9	2.14 .08	32.8 0.3	8.03 .34	45.0 3.1	16.21 +.02	57.4 2.7
31.0	51.52 .08	24.2 2.9	2.24 .11	33.1 0.2	7.81− .10	41.8 3.2	16.25 .07	54.6 2.7
Feb. 10.0	51.63 .13	21.3 2.7	2.37 .14	33.2 −0.1	7.82+ .14	38.6 3.2	16.34 .11	51.9 2.6
20.0	51.79 +.18	18.7 −2.5	2.53 +.17	33.2 +0.1	8.09+ .39	35.4 −3.1	16.48 +.16	49.4 −2.4
29.9	51.99 .23	16.3 2.1	2.71 .20	33.0 0.3	8.58 .60	32.4 2.8	16.66 .20	47.1 2.1
Mar. 10.9	52.24 .27	14.4 1.7	2.93 .23	32.6 0.5	9.29 .81	29.7 2.4	16.88 .24	45.3 1.7
20.9	52.53 .30	12.9 1.2	3.17 .25	32.0 0.7	10.20 .98	27.5 2.0	17.15 .28	43.8 1.2
30.8	52.85 .33	12.0 −0.6	3.43 .27	31.1 0.9	11.25 1.11	25.8 1.4	17.44 .31	42.9 0.6
Apr. 9.8	53.20 +.36	11.6 0.0	3.71 +.29	30.1 +1.1	12.43+1.21	24.6 −0.8	17.77 +.34	42.5 0.1
19.8	53.57 .37	11.9 +0.5	4.01 .31	28.9 1.3	13.67 1.26	24.1 −0.2	18.12 .35	42.7 +0.5
29.8	53.95 .38	12.7 1.1	4.32 .32	27.5 1.5	14.96 1.28	24.2 +0.4	18.48 .36	43.5 1.0
May 9.7	54.33 .38	14.1 1.6	4.64 .32	25.9 1.6	16.22 1.24	25.0 1.0	18.84 .36	44.8 1.5
19.7	54.70 .36	16.0 2.1	4.95 .32	24.3 1.6	17.44 1.17	26.3 1.6	19.20 .36	46.6 2.0
29.7	55.06 +.34	18.3 +2.5	5.27 +.31	22.7 +1.6	18.57+1.07	28.2 +2.1	19.55 +.34	48.8 +2.4
June 8.7	55.39 .31	21.0 2.9	5.56 .29	21.1 1.6	19.58 .93	30.5 2.6	19.88 .31	51.4 2.7
18.6	55.68 .27	24.1 3.1	5.85 .27	19.5 1.5	20.44 .77	33.3 3.0	20.18 .28	54.3 3.0
28.6	55.93 .23	27.3 3.3	6.10 .24	18.1 1.4	21.12 .59	36.4 3.3	20.44 .24	57.4 3.3
July 8.6	56.13 .18	30.6 3.4	6.32 .20	16.8 1.2	21.61 .30	39.8 3.5	20.66 .19	60.7 3.3
18.5	56.28 +.12	34.1 +3.4	6.50 +.16	15.6 +1.1	21.90+ .18	43.4 +3.6	20.83 +.14	64.0 +3.3
28.5	56.37 .06	37.5 3.3	6.63 .11	14.6 0.9	22.00− .02	47.1 3.7	20.94 .09	67.3 3.3
Aug. 7.5	56.40 +.01	40.8 3.2	6.73 .07	13.9 0.7	21.85 .23	50.8 3.7	21.00 +.03	70.5 3.1
17.5	56.38 −.05	43.9 3.0	6.77 +.02	13.3 0.5	21.52 .43	54.4 3.6	21.01 −.02	73.6 2.9
27.4	56.30 .10	46.8 2.7	6.78 −.02	12.9 0.3	20.99 .62	57.9 3.4	20.96 .07	76.4 2.7
Sept. 6.4	56.18 −.15	49.4 +2.4	6.73 −.06	12.6 +0.2	20.27− .80	61.2 +3.2	20.87 −.12	79.0 +2.4
16.4	56.01 .19	51.7 2.1	6.66 .09	12.6 0.0	19.39 .95	64.2 2.9	20.73 .16	81.3 2.1
26.4	55.80 .22	53.6 1.7	6.55 .12	12.6 −0.1	18.36 1.09	66.9 2.5	20.56 .19	83.2 1.7
Oct. 6.3	55.57 .24	55.0 1.2	6.42 .13	12.8 0.2	17.21 1.20	69.2 2.0	20.36 .21	84.7 1.3
16.3	55.32 .25	56.0 0.8	6.28 .14	13.0 0.3	15.97 1.26	71.0 1.6	20.14 .22	85.8 0.8
26.3	55.06 −.26	56.6 +0.3	6.14 −.14	13.4 −0.3	14.66 −1.33	72.4 +1.1	19.91 −.23	86.4 +0.4
Nov. 5.2	54.80 .25	56.6 −0.2	5.99 .14	13.7 0.4	13.31 1.35	73.2 +0.5	19.68 .22	86.5 −0.1
15.2	54.56 .23	56.1 0.7	5.86 .12	14.1 0.4	11.97 1.33	73.4 −0.1	19.47 .21	86.2 0.6
25.2	54.33 .21	55.2 1.2	5.75 .10	14.6 0.5	10.66 1.27	73.0 0.7	19.26 .19	85.4 1.0
Dec. 5.2	54.14 .18	53.7 1.7	5.67 .07	15.0 0.5	9.42 1.18	72.1 1.3	19.08 .16	84.1 1.5
15.1	53.98 −.14	51.8 −2.1	5.61 −.04	15.5 −0.5	8.30 −1.05	70.5 −1.8	18.93 −.13	82.4 −1.9
25.1	53.86 .10	49.5 2.4	5.58 −.02	16.0 0.4	7.32 .89	68.5 2.3	18.82 .09	80.3 2.2
35.1	53.79 −.05	47.0 −2.7	5.59 +.02	16.4 0.4	6.52 .70	66.0 −2.6	18.75 −.06	78.0 −2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	61¹ Cygni.		ζ Cygni.		α Cephei.		ι Pegasi.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 21 2	° ′ +38 14	h m 21 8	° ′ +29 47	h m 21 16	° ′ +62 8	h m 21 17	° ′ +19 21
	s	″	s	″	s	″	s	″
Jan. 1.1	12.70 −.06	19.1 −2.2	29.45 −.05	62.4 −2.0	3.07 −.24	49.2 −2.4	15.71 −.04	34.1 −1.6
11.1	12.66 −.02	16.7 2.4	29.41 −.01	60.3 2.2	2.86 .17	46.5 2.8	15.70 .00	32.4 1.7
21.1	12.67 +.03	14.3 2.5	29.42 +.02	58.0 2.3	2.73 .09	43.6 3.0	15.71 +.03	30.6 1.8
31.0	12.71 .07	11.7 2.5	29.46 .06	55.7 2.3	2.68 −.02	40.5 3.1	15.75 .06	28.8 1.8
Feb. 10.0	12.80 .11	9.2 2.4	29.54 .10	53.5 2.2	2.71 +.07	37.3 3.1	15.83 .10	27.1 1.7
20.0	12.94 +.16	6.8 −2.2	29.66 +.14	51.4 −2.0	2.82 +.15	34.2 −3.0	15.94 +.13	25.5 −1.5
29.9	13.12 .20	4.8 1.9	29.82 .18	49.5 1.7	3.01 .23	31.3 2.8	16.09 .16	24.2 1.2
Mar. 10.9	13.34 .24	3.0 1.5	30.01 .21	48.0 1.3	3.28 .31	28.7 2.4	16.27 .20	23.1 0.9
20.9	13.60 .28	1.7 1.1	30.24 .24	46.9 0.9	3.62 .37	26.6 1.9	16.48 .23	22.5 0.5
30.9	13.89 .31	0.9 −0.5	30.50 .27	46.3 −0.4	4.02 .43	24.9 1.4	16.72 .25	22.2 −0.1
Apr. 9.8	14.21 +.33	0.6 0.0	30.79 +.30	46.1 +0.1	4.48 +.48	23.8 −0.8	16.99 +.28	22.3 +0.4
19.8	14.55 .35	0.9 +0.5	31.10 .32	46.5 0.6	4.98 .51	23.3 −0.2	17.28 .30	22.9 0.8
29.8	14.91 .36	1.7 1.1	31.42 .33	47.3 1.1	5.50 .53	23.4 +0.4	17.59 .31	23.9 1.2
May 9.8	15.28 .37	3.1 1.6	31.76 .34	48.6 1.5	6.03 .53	24.2 1.0	17.91 .32	25.3 1.6
19.7	15.65 .36	4.9 2.0	32.10 .33	50.4 1.9	6.56 .52	25.5 1.6	18.23 .32	27.1 1.9
29.7	16.00 +.35	7.1 +2.4	32.43 +.32	52.5 +2.3	7.07 +.49	27.4 +2.1	18.55 +.31	29.1 +2.2
June 8.7	16.34 .32	9.7 2.8	32.74 .30	55.0 2.6	7.54 .45	29.8 2.6	18.86 .30	31.4 2.4
18.6	16.65 .29	12.7 3.0	33.03 .28	57.6 2.8	7.97 .40	32.6 3.0	19.14 .28	33.9 2.5
28.6	16.93 .25	15.8 3.2	33.29 .24	60.5 2.9	8.35 .34	35.7 3.3	19.41 .25	36.5 2.6
July 8.6	17.16 .21	19.1 3.3	33.52 .20	63.4 3.0	8.65 .27	39.1 3.5	19.64 .21	39.1 2.6
18.6	17.35 +.16	22.4 +3.3	33.70 +.16	66.4 +3.0	8.88 +.19	42.7 +3.6	19.83 +.17	41.7 +2.6
28.5	17.48 .11	25.7 3.3	33.84 .11	69.4 2.9	9.04 .11	46.4 3.7	19.98 .13	44.3 2.5
Aug. 7.5	17.57 .06	29.0 3.2	33.93 .06	72.2 2.8	9.11 +.03	50.1 3.7	20.08 .08	46.7 2.3
17.5	17.60 +.01	32.1 3.0	33.97 +.02	74.9 2.6	9.10 −.05	53.8 3.6	20.14 +.04	48.9 2.1
27.4	17.58 −.04	35.0 2.8	33.96 −.03	77.4 2.4	9.02 .12	57.3 3.4	20.16 −.01	50.9 1.9
Sept. 6.4	17.51 −.09	37.6 +2.5	33.91 −.07	79.7 +2.1	8.86 −.20	60.6 +3.2	20.13 −.05	52.7 +1.7
16.4	17.41 .13	39.9 2.2	33.82 .11	81.6 1.8	8.63 .26	63.7 2.9	20.06 .08	54.3 1.4
26.4	17.26 .16	41.9 1.8	33.69 .14	83.2 1.5	8.34 .31	66.3 2.5	19.96 .11	55.5 1.1
Oct. 6.3	17.09 .18	43.5 1.4	33.54 .16	84.5 1.1	8.00 .36	68.7 2.1	19.83 .13	56.5 0.8
16.3	16.90 .20	44.7 1.0	33.37 .17	85.4 0.7	7.63 .39	70.5 1.6	19.69 .15	57.1 0.5
26.3	16.69 −.20	45.5 +0.5	33.19 −.18	85.9 +0.3	7.22 −.41	71.9 +1.1	19.54 −.15	57.4 +0.2
Nov. 5.3	16.49 .20	45.7 +0.1	33.01 .18	86.0 −0.1	6.81 .42	72.7 +0.5	19.38 .15	57.4 −0.2
15.2	16.29 .19	45.6 −0.4	32.83 .17	85.7 0.5	6.39 .41	72.9 0.0	19.23 .14	57.1 0.5
25.2	16.11 .17	44.9 0.9	32.67 .15	85.0 0.9	5.98 .39	72.6 −0.6	19.10 .13	56.4 0.8
Dec. 5.2	15.95 .15	43.8 1.3	32.53 .13	84.0 1.3	5.60 .37	71.7 1.2	18.98 .11	55.5 1.1
15.2	15.81 −.12	42.3 −1.7	32.41 −.10	82.5 −1.6	5.25 −.32	70.3 −1.7	18.88 −.08	54.3 −1.3
25.1	15.71 .08	40.5 2.0	32.32 .07	80.8 1.9	4.95 .27	68.3 2.2	18.81 .06	52.8 1.5
35.1	15.65 −.05	38.3 −2.3	32.27 −.04	78.8 −2.1	4.71 −.22	65.9 −2.5	18.77 −.03	51.2 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		β Cephei.		ξ Aquarii.		ε Pegasi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 21 26	° ′ − 6 1	h m 21 27	° ′ +70 5	h m 21 32	° ′ − 8 18	h m 21 39	° ′ + 9 23
	s	″	s	″	s	″	s	″
Jan. 1.1	4.55 −.02	48.9 −0.5	15.06 −.39	84.3 −2.3	12.50 −.02	80.1 −0.4	4.08 −.04	52.1 −1.2
11.1	4.55 +.01	49.5 0.5	14.71 .30	81.8 2.7	12.49 +.01	80.5 0.4	4.06 −.01	50.9 1.2
21.1	4.57 .04	50.0 0.4	14.45 .20	78.9 3.0	12.51 .04	80.9 0.3	4.06 +.02	49.7 1.2
31.0	4.62 .07	50.3 0.3	14.31 −.09	75.8 3.2	12.56 .07	81.1 −0.2	4.10 .05	48.4 1.2
Feb. 10.0	4.71 .10	50.6 −0.2	14.27 +.03	72.6 3.2	12.64 .09	81.2 0.0	4.16 .08	47.3 1.1
20.0	4.83 +.13	50.7 0.0	14.36 +.14	69.4 −3.1	12.75 +.13	81.1 +0.2	4.25 +.11	46.3 −0.9
29.9	4.97 .16	50.6 +0.2	14.56 .26	66.4 2.9	12.89 .16	80.8 0.4	4.38 .14	45.5 0.6
Mar. 10.9	5.15 .19	50.2 0.4	14.87 .36	63.6 2.6	13.07 .19	80.4 0.6	4.54 .18	45.0 −0.3
20.9	5.35 .22	49.7 0.7	15.29 .46	61.2 2.2	13.27 .22	79.7 0.8	4.73 .21	44.8 0.0
30.9	5.59 .24	48.9 0.9	15.79 .54	59.3 1.7	13.50 .24	78.8 1.0	4.95 .24	44.9 +0.3
Apr. 9.8	5.84 +.27	47.8 +1.2	16.37 +.61	57.9 −1.1	13.75 +.27	77.7 +1.2	5.20 +.26	45.4 +0.6
19.8	6.12 .29	46.5 1.4	17.01 .66	57.1 −0.5	14.03 .29	76.3 1.4	5.47 .28	46.2 1.0
29.8	6.42 .31	45.1 1.6	17.69 .68	56.9 +0.1	14.33 .31	74.8 1.6	5.77 .30	47.4 1.3
May 9.8	6.73 .32	43.5 1.7	18.39 .69	57.4 0.8	14.64 .32	73.1 1.7	6.07 .31	48.9 1.6
19.7	7.05 .32	41.7 1.8	19.08 .68	58.5 1.4	14.96 .32	71.4 1.8	6.39 .32	50.6 1.8
29.7	7.37 +.31	39.9 +1.8	19.74 +.64	60.1 +1.9	15.28 +.32	69.6 +1.8	6.71 +.31	52.6 +2.0
June 8.7	7.68 .30	38.0 1.8	20.37 .59	62.3 2.4	15.60 .31	67.7 1.8	7.02 .30	54.7 2.2
18.7	7.98 .29	36.2 1.8	20.93 .53	64.9 2.8	15.90 .29	66.0 1.7	7.31 .29	56.9 2.3
28.6	8.25 .26	34.5 1.7	21.42 .44	67.9 3.2	16.18 .27	64.3 1.6	7.59 .26	59.2 2.3
July 8.6	8.50 .23	32.9 1.5	21.82 .35	71.2 3.4	16.43 .23	62.8 1.4	7.84 .23	61.5 2.2
18.6	8.71 +.19	31.4 +1.4	22.13 +.25	74.8 +3.6	16.65 +.20	61.5 +1.3	8.05 +.19	63.7 +2.1
28.5	8.88 .15	30.2 1.2	22.33 .15	78.5 3.7	16.83 .16	60.3 1.1	8.22 .15	65.8 2.0
Aug. 7.5	9.00 .10	29.1 1.0	22.42 +.04	82.3 3.8	16.96 .11	59.3 0.9	8.35 .11	67.7 1.9
17.5	9.09 .06	28.3 0.8	22.41 −.07	86.0 3.7	17.05 .07	58.6 0.6	8.44 .06	69.5 1.7
27.5	9.12 +.02	27.6 0.6	22.29 .17	89.7 3.6	17.09 +.02	58.1 0.4	8.48 +.02	71.0 1.4
Sept. 6.4	9.12 −.02	27.1 +0.4	22.07 −.27	93.2 +3.4	17.09 −.02	57.8 +0.2	8.48 −.02	72.4 +1.2
16.4	9.07 .06	26.9 +0.2	21.76 .35	96.4 3.1	17.06 .06	57.6 0.0	8.44 .05	73.5 1.0
26.4	9.00 .09	26.8 0.0	21.36 .43	99.4 2.8	16.98 .09	57.7 0.1	8.37 .08	74.3 0.7
Oct. 6.4	8.89 .11	26.9 0.1	20.90 .50	102.0 2.4	16.88 .11	57.8 0.2	8.27 .11	74.9 0.5
16.3	8.77 .13	27.1 0.2	20.37 .55	104.1 1.9	16.76 .12	58.1 0.3	8.15 .13	75.3 +0.2
26.3	8.64 −.13	27.4 −0.3	19.81 −.58	105.8 +1.4	16.63 −.13	58.5 −0.4	8.02 −.13	75.4 0.0
Nov. 5.3	8.50 .13	27.8 0.4	19.21 .60	106.9 0.9	16.50 .13	58.9 0.5	7.89 .13	75.3 −0.2
15.2	8.37 .12	28.2 0.5	18.61 .60	107.5 +0.3	16.37 .12	59.4 0.5	7.75 .13	75.0 0.4
25.2	8.25 .11	28.7 0.5	18.01 .59	107.5 −0.3	16.25 .11	59.9 0.5	7.63 .12	74.4 0.6
Dec. 5.2	8.15 .09	29.3 0.6	17.43 .56	106.9 0.9	16.15 .09	60.4 0.5	7.52 .10	73.7 0.8
15.2	8.07 −.07	29.8 −0.6	16.90 −.50	105.6 −1.5	16.07 −.07	60.9 −0.5	7.43 −.08	72.8 −1.0
25.1	8.02 .04	30.4 0.6	16.42 .44	103.9 2.0	16.01 .04	61.3 0.5	7.36 .06	71.7 1.1
35.1	8.00 −.01	31.0 0.5	16.02 .36	101.7 2.5	15.98 .01	61.8 −0.4	7.31 −.03	70.5 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Cephei.		μ Capricorni.		79 Draconis.		α Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declin *Sout*
	h m 21 40	° ′ +70 49	h m 21 47	° ′ −14 2	h m 21 51	° ′ +73 12	h m 22 0	° − 0
	s	″	s	″	s	″	s	″
Jan. 1.1	20.00 −.43	68.3 −2.1	37.21 −.04	35.8 −0.2	29.47 −.54	49.4 −2.0	26.13 −.05	33.5
11.1	19.60 .35	65.9 2.6	37.19 −.01	35.9 −0.1	28.98 .44	47.2 2.4	26.09 −.02	34.3
21.1	19.31 .24	63.2 2.9	37.20 +.02	35.9 +0.1	28.60 .32	44.6 2.8	26.09 +.01	34.9
31.1	19.12 .13	60.2 3.1	37.24 .05	35.8 0.2	28.34 .20	41.6 3.0	26.11 .03	35.6
Feb. 10.0	19.05 −.01	57.0 3.2	37.30 .08	35.5 0.4	28.21 −.06	38.5 3.2	26.15 .06	36.1
20.0	19.09 +.11	53.8 −3.1	37.40 +.11	35.0 +0.6	28.21 +.08	35.3 −3.1	26.23 +.09	36.4
Mar. 1.0	19.26 .23	50.7 3.0	37.53 .14	34.4 0.7	28.36 .22	32.2 3.0	26.34 .12	36.5
10.9	19.55 .34	47.9 2.7	37.69 .18	33.6 0.9	28.64 .35	29.3 2.8	26.48 .16	36.4
20.9	19.95 .45	45.4 2.3	37.88 .21	32.5 1.1	29.05 .47	26.7 2.4	26.65 .19	36.1
30.9	20.45 .54	43.3 1.8	38.10 .24	31.3 1.3	29.58 .58	24.5 1.9	26.86 .22	35.5
Apr. 9.9	21.03 +.61	41.8 −1.2	38.35 +.26	29.9 +1.5	30.21 +.67	22.8 −1.4	27.09 +.25	34.6
19.8	21.67 .67	40.8 −0.6	38.63 .29	28.3 1.6	30.92 .74	21.7 0.8	27.35 .27	33.5
29.8	22.37 .70	40.5 0.0	38.93 .31	26.7 1.7	31.69 .78	21.1 −0.2	27.64 .29	32.1
May 9.8	23.08 .72	40.8 +0.6	39.24 .32	24.9 1.8	32.49 .80	21.2 +0.4	27.94 .31	30.4
19.8	23.80 .71	41.7 1.2	39.57 .33	23.1 1.8	33.30 .80	21.9 1.0	28.25 .32	28.6
29.7	24.50 +.68	43.2 +1.7	39.90 +.33	21.3 +1.8	34.09 +.77	23.2 +1.6	28.57 +.32	26.7
June 8.7	25.17 .63	45.2 2.3	40.22 .32	19.6 1.7	34.84 .72	25.1 2.1	28.89 .31	24.7
18.7	25.77 .57	47.7 2.7	40.53 .30	17.9 1.6	35.54 .65	27.4 2.6	29.19 .30	22.7
28.6	26.30 .49	50.6 3.1	40.83 .28	16.4 1.4	36.15 .57	30.2 3.0	29.48 .28	20.7
July 8.6	26.75 .40	53.8 3.4	41.10 .25	15.1 1.2	36.68 .47	33.3 3.3	29.75 .25	18.8
18.6	27.10 +.30	57.3 +3.6	41.33 +.22	14.0 +1.0	37.09 +.36	36.8 +3.5	29.98 +.22	17.0
28.6	27.34 .19	61.0 3.7	41.53 .17	13.1 0.8	37.39 .24	40.4 3.7	30.18 .18	15.4
Aug. 7.5	27.48 +.08	64.8 3.8	41.68 .13	12.4 0.5	37.57 +.12	44.1 3.8	30.33 .13	13.9
17.5	27.50 −.03	68.6 3.7	41.79 .08	12.0 0.3	37.63 .00	48.0 3.8	30.44 .09	12.7
27.5	27.42 .14	72.3 3.7	41.85 +.04	11.8 +0.1	37.56 −.13	51.7 3.7	30.51 .05	11.7
Sept. 6.5	27.23 −.24	75.9 +3.5	41.86 .00	11.8 −0.1	37.38 −.24	55.4 +3.6	30.54 +.01	10.9
16.4	26.95 .33	79.3 3.2	41.84 −.04	12.0 0.2	37.08 .35	58.9 3.3	30.52 −.03	10.4
26.4	26.57 .41	82.3 2.9	41.78 .07	12.3 0.4	36.68 .44	62.1 3.1	30.47 .06	10.0
Oct. 6.4	26.12 .48	85.1 2.5	41.69 .10	12.7 0.5	36.19 .53	65.0 2.7	30.40 .09	9.8
16.3	25.61 .54	87.4 2.1	41.58 .12	13.2 0.5	35.63 .60	67.5 2.3	30.29 .11	9.8
26.3	25.04 −.58	89.3 +1.6	41.45 −.13	13.7 −0.5	35.00 −.65	69.6 +1.8	30.18 −.12	10.0
Nov. 5.3	24.44 .61	90.6 1.1	41.32 .13	14.3 0.5	34.32 .69	71.1 1.3	30.05 .12	10.3
15.3	23.82 .62	91.4 +0.5	41.18 .13	14.8 0.5	33.61 .71	72.1 0.7	29.93 .12	10.7
25.2	23.20 .61	91.6 −0.1	41.06 .12	15.3 0.5	32.90 .70	72.5 +0.1	29.81 .11	11.3
Dec. 5.2	22.60 .58	91.2 0.7	40.95 .10	15.8 0.4	32.20 .68	72.3 −0.5	29.70 .10	11.9
15.2	22.03 −.54	90.2 −1.3	40.86 −.08	16.1 −0.3	31.54 −.64	71.5 −1.1	29.61 −.08	12.5
25.1	21.52 .48	88.6 1.8	40.80 .05	16.4 0.2	30.92 .58	70.1 1.7	29.54 .06	13.2
35.1	21.08 −.41	86.5 −2.3	40.76 −.03	16.6 −0.1	30.38 −.50	68.2 −2.1	29.49 −.04	14.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Gruis.		θ Aquarii.		π Aquarii.		η Aquarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	22 1	−47 27	22 11	− 8 17	22 19	+ 0 50	22 30	− 0 38
	s	″	s	″	s	″	s	″
Jan. 1.1	40.48 −.10	66.1 +1.3	20.46 −.05	69.0 −0.4	57.63 −.06	56.8 −0.7	0.46 −.06	74.8 −0.7
11.1	40.41 .05	64.6 1.6	20.42 −.03	69.4 0.3	57.58 .04	56.0 0.7	0.40 .04	75.5 0.7
21.1	40.38 −.01	62.8 1.9	20.41 .00	69.7 0.2	57.55 −.01	55.3 0.7	0.37 −.02	76.1 0.6
31.1	40.39 +.03	60.8 2.2	20.42 +.03	69.8 −0.1	57.55 +.01	54.6 0.6	0.37 +.01	76.7 0.5
Feb. 10.0	40.45 .08	58.5 2.4	20.46 .06	69.9 +0.1	57.58 .04	54.1 0.5	0.38 .03	77.1 0.4
20.0	40.55 +.12	56.0 +2.5	20.53 +.09	69.7 +0.2	57.64 +.07	53.7 −0.3	0.43 +.06	77.4 −0.2
Mar. 1.0	40.70 .17	53.5 2.6	20.64 .12	69.4 0.4	57.73 .10	53.4 −0.1	0.51 .10	77.6 0.0
11.0	40.89 .21	50.8 2.6	20.77 .15	68.8 0.7	57.85 .14	53.4 +0.1	0.62 .13	77.5 +0.2
20.9	41.12 .26	48.2 2.6	20.93 .18	68.1 0.9	58.00 .17	53.7 0.4	0.77 .16	77.1 0.5
30.9	41.40 .30	45.6 2.6	21.13 .21	67.1 1.1	58.19 .20	54.3 0.7	0.94 .19	76.5 0.8
Apr. 9.9	41.72 +.34	43.0 +2.5	21.36 +.24	65.8 +1.3	58.41 +.23	55.1 +1.0	1.16 +.23	75.6 +1.0
19.8	42.07 .37	40.6 2.3	21.61 .27	64.4 1.5	58.66 .26	56.2 1.2	1.40 .26	74.4 1.3
29.8	42.46 .40	38.4 2.1	21.89 .29	62.8 1.7	58.93 .28	57.5 1.5	1.67 .28	73.0 1.5
May 9.8	42.87 .42	36.4 1.9	22.20 .31	61.0 1.8	59.23 .30	59.1 1.7	1.96 .30	71.4 1.7
19.8	43.29 .43	34.6 1.6	22.51 .32	59.2 1.9	59.54 .31	60.9 1.9	2.27 .31	69.6 1.9
29.7	43.73 +.43	33.2 +1.3	22.84 +.32	57.3 +1.9	59.86 +.32	62.9 +2.0	2.59 +.32	67.6 +2.0
June 8.7	44.16 .43	32.1 0.9	23.16 .32	55.3 1.9	60.18 .32	64.9 2.1	2.91 .32	65.6 2.0
18.7	44.58 .41	31.4 0.5	23.47 .31	53.4 1.8	60.49 .31	67.0 2.1	3.22 .31	63.5 2.0
28.7	44.98 .38	31.0 +0.1	23.77 .29	51.6 1.7	60.79 .29	69.1 2.0	3.53 .29	61.5 2.0
July 8.6	45.35 .34	31.1 −0.3	24.05 .26	50.0 1.5	61.06 .26	71.0 1.9	3.81 .27	59.5 1.9
18.6	45.67 +.30	31.6 −0.6	24.29 +.23	48.5 +1.4	61.31 +.23	72.9 +1.8	4.06 +.24	57.7 +1.8
28.6	45.95 .24	32.4 1.0	24.50 .19	47.3 1.2	61.52 .19	74.7 1.7	4.28 .20	56.0 1.6
Aug. 7.5	46.16 .19	33.6 1.3	24.67 .15	46.2 0.9	61.69 .15	76.2 1.5	4.46 .16	54.5 1.4
17.5	46.32 .12	35.0 1.5	24.80 .11	45.4 0.7	61.82 .11	77.6 1.2	4.60 .12	53.2 1.2
27.5	46.41 +.06	36.6 1.7	24.88 .06	44.8 0.5	61.91 .06	78.7 1.0	4.70 .07	52.2 0.9
Sept. 6.5	46.43 .00	38.4 −1.8	24.92 +.02	44.5 +0.3	61.95 +.02	79.6 +0.8	4.75 +.03	51.3 +0.7
16.4	46.40 −.06	40.3 1.8	24.92 −.02	44.3 +0.1	61.95 −.01	80.3 0.6	4.77 .00	50.8 0.5
26.4	46.31 .11	42.1 1.8	24.88 .05	44.4 −0.1	61.92 .05	80.8 0.4	4.75 −.04	50.4 0.3
Oct 6.4	46.17 .16	43.9 1.7	24.81 .08	44.6 0.3	61.86 .08	81.0 +0.2	4.69 .07	50.2 +0.1
16.4	45.99 .19	45.5 1.5	24.71 .11	44.9 0.4	61.77 .10	81.1 0.0	4.61 .09	50.2 −0.1
26.3	45.79 −.21	46.8 −1.2	24.60 −.12	45.3 −0.5	61.67 −.11	81.0 0.2	4.51 −.10	50.4 −0.2
Nov. 5.3	45.57 .22	47.8 0.8	24.48 .12	45.8 0.5	61.55 .12	80.7 0.3	4.40 .11	50.6 0.4
15.3	45.35 .22	48.4 0.4	24.36 .12	46.3 0.5	61.43 .12	80.3 0.4	4.29 .11	51.1 0.5
25.2	45.13 .21	48.7 −0.1	24.24 .11	46.9 0.5	61.31 .11	79.8 0.5	4.17 .11	51.6 0.6
Dec. 5.2	44.93 .19	48.6 +0.3	24.13 .10	47.4 0.5	61.20 .10	79.2 0.6	4.06 .10	52.2 0.6
15.2	44.76 −.16	48.1 +0.7	24.03 −.09	48.0 −0.5	61.11 −.09	78.6 −0.7	3.96 −.09	52.8 −0.7
25.2	44.62 .12	47.1 1.1	23.96 .07	48.4 0.5	61.03 .07	77.8 0.7	3.88 .08	53.5 0.7
35.1	44.51 −.09	45.9 +1.4	23.90 −.05	48.9 −0.4	60.96 −.05	77.1 −0.7	3.81 −.06	54.2 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	226 Cephei (B.)		ζ Pegasi.		ι Cephei.		λ Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	22 30	+75 41	22 36	+10 17	22 45	+65 38	22 47	− 8 7
	s	″	s	″	s	″	s	″
Jan. 1.2	22.29 −.71	41.5 −1.4	16.15 −.08	20.0 −1.0	56.17 −.39	87.9 −1.4	11.24 −.07	62.4 −0.4
11.1	21.62 .62	39.8 2.0	16.08 .05	18.9 1.1	55.80 .34	86.2 1.9	11.18 .05	62.8 0.3
21.1	21.05 .51	37.6 2.4	16.04 .03	17.9 1.1	55.49 .28	84.1 2.3	11.14 .03	63.1 0.2
31.1	20.61 .37	34.9 2.8	16.02 −.01	16.8 1.1	55.24 .21	81.5 2.7	11.12 −.01	63.2 −0.1
Feb. 10.1	20.30 .23	32.0 3.0	16.03 +.02	15.7 1.0	55.07 .13	78.7 2.9	11.12 +.02	63.2 +0.1
20.0	20.15 −.07	28.9 −3.1	16.07 +.05	14.8 −0.9	54.98 −.04	75.8 −3.0	11.16 +.05	63.0 +0.3
Mar. 1.0	20.17 +.10	25.8 3.1	16.13 .08	14.0 0.7	54.99 +.05	72.8 3.0	11.22 .08	62.7 0.5
11.0	20.35 .26	22.7 3.0	16.23 .12	13.5 0.4	55.09 .15	69.8 2.8	11.32 .11	62.1 0.7
20.9	20.69 .42	19.9 2.7	16.37 .16	13.2 −0.1	55.29 .25	67.1 2.6	11.44 .15	61.3 0.9
30.9	21.18 .56	17.3 2.3	16.55 .19	13.2 +0.2	55.58 .34	64.7 2.2	11.61 .18	60.2 1.2
Apr. 9.9	21.80 +.68	15.2 −1.9	16.76 +.22	13.6 +0.5	55.96 +.42	62.7 −1.8	11.81 +.21	58.9 +1.4
19.9	22.55 .79	13.6 1.3	17.00 .25	14.3 0.9	56.41 .48	61.2 1.2	12.04 .25	57.5 1.6
29.8	23.38 .86	12.6 0.7	17.26 .28	15.3 1.2	56.93 .54	60.2 0.7	12.30 .27	55.8 1.8
May 9.8	24.27 .91	12.1 −0.1	17.56 .30	16.6 1.5	57.49 .58	59.8 −0.1	12.58 .30	54.0 1.9
19.8	25.20 .93	12.3 +0.5	17.87 .32	18.3 1.7	58.08 .60	60.0 +0.5	12.89 .31	52.0 2.0
29.8	26.14 +.93	13.0 +1.0	18.19 +.32	20.1 +2.0	58.69 +.61	60.8 +1.1	13.21 +.32	50.0 +2.0
June 8.7	27.06 .89	14.4 1.6	18.51 .32	22.2 2.1	59.30 .60	62.1 1.6	13.53 .32	48.0 2.0
18.7	27.93 .84	16.2 2.1	18.83 .31	24.4 2.2	59.88 .57	64.0 2.1	13.86 .32	46.0 1.9
28.7	28.73 .76	18.6 2.6	19.13 .29	26.6 2.3	60.43 .53	66.3 2.6	14.17 .30	44.1 1.8
July 8.6	29.44 .66	21.4 3.0	19.42 .27	28.9 2.3	60.93 .47	69.1 2.9	14.46 .28	42.3 1.7
18.6	30.05 +.54	24.6 +3.3	19.67 +.24	31.2 +2.2	61.37 +.40	72.2 +3.2	14.73 +.25	40.7 +1.5
28.6	30.53 .42	28.0 3.5	19.89 .20	33.4 2.1	61.74 .33	75.6 3.5	14.97 .22	39.4 1.3
Aug. 7.6	30.89 .29	31.6 3.7	20.08 .16	35.4 2.0	62.03 .25	79.2 3.6	15.17 .18	38.2 1.0
17.5	31.10 .15	35.4 3.8	20.22 .12	37.3 1.8	62.24 .16	82.9 3.7	15.33 .14	37.3 0.8
27.5	31.18 +.01	39.3 3.8	20.32 .08	39.0 1.6	62.36 +.08	86.6 3.7	15.44 .09	36.7 0.5
Sept. 6.5	31.13 −.12	43.1 +3.8	20.38 +.04	40.5 +1.4	62.40 .00	90.3 +3.7	15.52 +.05	36.3 +0.3
16.5	30.94 .25	46.8 3.6	20.40 .00	41.7 1.1	62.35 −.08	93.9 3.5	15.55 +.01	36.1 +0.1
26.4	30.62 .38	50.3 3.4	20.38 −.03	42.7 0.9	62.23 .16	97.4 3.3	15.54 −.02	36.2 −0.1
Oct, 6.4	30.18 .49	53.6 3.1	20.33 .06	43.5 0.6	62.03 .23	100.5 3.0	15.50 .05	36.4 0.3
16.4	29.64 .59	56.6 2.8	20.25 .09	44.0 0.4	61.77 .29	103.4 2.7	15.44 .08	36.7 0.4
26.3	29.01 −.67	59.1 +2.3	20.15 −.10	44.3 +0.2	61.45 −.34	105.9 +2.3	15.35 −.10	37.2 −0.5
Nov. 5.3	28.30 .74	61.3 1.8	20.04 .11	44.3 0.0	61.09 .38	107.9 1.8	15.24 .11	37.8 0.6
15.3	27.53 .79	62.8 1.3	19.93 .12	44.2 −0.3	60.69 .41	109.4 1.3	15.13 .11	38.4 0.6
25.3	26.72 .81	63.9 0.7	19.81 .12	43.8 0.5	60.26 .43	110.4 0.7	15.02 .11	39.0 0.6
Dec. 5.2	25.91 .81	64.3 +0.1	19.69 .11	43.3 0.6	59.83 .44	110.8 +0.1	14.90 .11	39.6 0.6
15.2	25.10 −.79	64.1 −0.5	19.59 −.10	42.6 −0.8	59.39 −.43	110.6 −0.5	14.80 −.10	40.2 −0.6
25.2	24.32 .75	63.3 1.1	19.49 .09	41.7 0.9	58.97 .41	109.9 1.1	14.71 .08	40.7 0.5
35.2	23.61 −.68	61.9 −1.6	19.42 −.07	40.7 −1.0	58.58 −.37	108.5 −1.6	14.63 −.07	41.1 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.		α Piscis Australis. (*Fomalhaut.*)		α Pegasi. (*Markab.*)		ο Cephei.		θ Piscium.	
		Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
		h m 22 51	° ′ −30 10	h m 22 59	° ′ +14 38	h m 23 14	° ′ +67 32	h m 23 22	° ′ + 5 48
		s	″	s	″	s	″	s	″
Jan.	1.2	54.28 −.09	34.3 +0.3	34.51 −.09	48.2 −1.1	19.14 −.44	51.5 −1.0	41.47 −.09	29.2 −0.8
	11.1	54.20 .07	33.8 0.6	34.43 .07	47.1 1.1	18.71 .41	50.2 1.5	41.38 .08	28.5 0.8
	21.1	54.14 .04	33.1 0.9	34.36 .05	46.0 1.2	18.33 .36	48.4 2.0	41.31 .06	27.7 0.8
	31.1	54.11 −.01	32.1 1.1	34.32 .03	44.7 1.2	18.00 .29	46.2 2.4	41.26 .04	26.9 0.7
Feb.	10.1	54.10 +.02	30.8 1.3	34.31 −.01	43.5 1.2	17.75 .20	43.6 2.7	41.23 −.02	26.2 0.6
	20.1	54.13 +.05	29.3 +1.6	34.32 +.02	42.4 −1.1	17.59 −.11	40.7 −2.9	41.22 +.01	25.6 −0.5
Mar.	1.0	54.20 .08	27.6 1.8	34.36 .06	41.4 0.9	17.52 −.01	37.8 3.0	41.25 .04	25.1 0.3
	11.0	54.30 .12	25.7 2.0	34.44 .09	40.6 0.7	17.56 +.09	34.8 2.9	41.30 .07	24.9 0.1
	21.0	54.43 .16	23.6 2.1	34.55 .13	40.1 0.4	17.71 .20	32.0 2.7	41.39 .11	24.8 +0.1
	30.9	54.61 .19	21.4 2.2	34.71 .17	39.9 −0.1	17.96 .30	29.4 2.4	41.52 .15	25.1 0.4
Apr.	9.9	54.82 +.23	19.1 +2.3	34.90 +.21	39.9 +0.2	18.30 +.39	27.2 −2.0	41.69 +.19	25.6 +0.7
	19.9	55.07 .27	16.8 2.3	35.12 .24	40.4 0.6	18.74 .48	25.4 1.6	41.89 .22	26.5 1.0
	29.8	55.35 .30	14.5 2.3	35.38 .27	41.2 0.9	19.25 .55	24.0 1.1	42.13 .25	27.6 1.3
May	9.8	55.66 .32	12.2 2.2	35.67 .30	42.3 1.3	19.83 .60	23.2 −0.5	42.39 .28	29.0 1.5
	19.8	56.00 .34	9.9 2.1	35.97 .31	43.8 1.6	20.45 .63	23.0 +0.1	42.69 .30	30.6 1.7
	29.8	56.35 +.36	7.9 +2.0	36.30 +.32	45.5 +1.8	21.10 +.65	23.4 +0.7	43.00 +.32	32.5 +1.9
June	8.7	56.71 .36	6.0 1.8	36.62 .33	47.5 2.0	21.76 .65	24.4 1.2	43.32 .32	34.5 2.1
	18.7	57.07 .36	4.4 1.5	36.95 .32	49.7 2.2	22.41 .63	25.9 1.7	43.64 .32	36.6 2.1
	28.7	57.41 .34	3.1 1.2	37.27 .31	51.9 2.3	23.02 .60	27.9 2.2	43.96 .31	38.7 2.2
July	8.6	57.74 .32	2.0 0.9	37.56 .29	54.3 2.4	23.60 .55	30.4 2.6	44.26 .29	40.9 2.1
	18.6	58.05 +.29	1.4 +0.5	37.84 +.26	56.7 +2.5	24.12 +.49	33.2 +3.0	44.55 +.27	43.0 +2.0
	28.6	58.32 .25	1.0 +0.2	38.08 .23	59.0 2.3	24.58 .41	36.4 3.3	44.80 .24	45.0 1.9
Aug.	7.6	58.54 .21	1.0 −0.2	38.28 .19	61.3 2.2	24.95 .33	39.8 3.5	45.02 .20	46.9 1.7
	17.5	58.73 .16	1.3 0.5	38.45 .16	63.4 2.0	25.25 .25	43.4 3.6	45.21 .17	48.5 1.6
	27.5	58.86 .12	2.0 0.8	38.57 .12	65.3 1.8	25.45 .16	47.1 3.7	45.36 .13	50.0 1.4
Sept.	6.5	58.95 +.07	2.9 −1.0	38.65 +.06	67.1 +1.6	25.57 +.07	50.9 +3.7	45.46 +.09	51.3 +1.1
	16.5	58.98 +.02	4.0 1.2	38.69 +.02	68.6 1.4	25.60 −.01	54.6 3.6	45.53 .05	52.3 0.9
	26.4	58.97 −.02	5.2 1.3	38.69 −.01	69.8 1.2	25.54 .10	58.2 3.5	45.55 +.01	53.0 0.7
Oct.	6.4	58.93 .06	6.6 1.3	38.66 .04	70.9 0.9	25.40 .17	61.6 3.3	45.55 −.02	53.6 0.5
	16.4	58.84 .09	7.9 1.3	38.60 .07	71.7 0.7	25.19 .25	64.7 3.0	45.51 .05	54.0 +0.2
	26.3	58.73 −.11	9.2 −1.2	38.52 −.09	72.2 +0.4	24.91 −.31	67.5 +2.6	45.45 −.07	54.1 0.0
Nov.	5.3	58.60 .13	10.4 1.1	38.42 .10	72.5 +0.2	24.57 .37	69.9 2.2	45.38 .09	54.0 0.1
	15.3	58.46 .14	11.4 0.9	38.31 .11	72.5 −0.1	24.18 .41	71.8 1.7	45.28 .10	53.8 0.3
	25.3	58.32 .14	12.2 0.7	38.20 .11	72.3 0.3	23.75 .44	73.1 1.1	45.18 .10	53.4 0.4
Dec.	5.2	58.18 .13	12.8 0.4	38.08 .11	71.8 0.5	23.29 .46	74.0 +0.5	45.08 .11	52.9 0.6
	15.2	58.04 −.12	13.1 −0.1	37.97 −.11	71.2 −0.7	22.83 −.47	74.3 −0.1	44.97 −.10	52.3 0.7
	25.2	57.93 .11	13.1 +0.1	37.87 .10	70.4 0.9	22.36 .46	73.9 0.6	44.87 .10	51.6 0.7
	35.2	57.83 .09	12.9 +0.4	37.77 −.09	69.4 1.1	21.91 −.43	73.0 −1.2	44.78 .09	50.8 0.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Piscium.		γ Cephei.		Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 23 34	° ′ + 5 3	h m 23 34	° ′ +77 2	h m 23 49	° ′ +73 49	h m 23 53	° ′ + 6 17
	s	″	s	″	s	″	s	″
Jan. 1.2	36.07 −.09	47.5 −0.7	60.84− .86	87.2 −0.5	43.95 −.67	74.7 −0.4	58.36 −.10	18.4 −0.7
11.2	35.99 .08	46.8 0.8	60.01 .81	86.3 1.2	43.30 .64	74.0 1.0	58.26 .09	17.6 0.7
21.2	35.91 .07	46.0 0.8	59.23 .73	84.9 1.7	42.68 .59	72.7 1.6	58.18 .08	16.9 0.7
31.1	35.85 .05	45.3 0.7	58.55 .62	82.9 2.2	42.12 .51	70.9 2.1	58.10 .06	16.1 0.7
Feb. 10.1	35.81 −.03	44.6 0.6	57.99 .49	80.5 2.6	41.66 .41	68.6 2.5	58.05 .04	15.5 0.6
20.1	35.80 .00	44.0 −0.5	57.57− .33	77.7 −2.9	41.30 −.29	65.9 −2.8	58.01 −.03	14.9 −0.5
Mar. 1.0	35.81 +.03	43.6 0.3	57.32− .16	74.8 3.0	41.07 .16	63.1 3.0	58.01 +.01	14.5 0.3
11.0	35.85 .06	43.4 −0.1	57.25+ .02	71.7 3.0	40.98 −.02	60.0 3.0	58.03 .04	14.2 −0.1
21.0	35.93 .10	43.5 +0.2	57.37 .20	68.7 2.9	41.04 +.13	57.1 2.9	58.09 .08	14.2 +0.1
31.0	36.05 .14	43.7 0.4	57.66 .38	65.8 2.7	41.25 .28	54.2 2.7	58.19 .12	14.4 0.3
Apr. 9.9	36.20 +.17	44.3 +0.7	58.13+ .55	63.3 −2.4	41.59 +.42	51.6 −2.4	58.32 +.16	14.9 +0.6
19.9	36.40 .21	45.2 1.0	58.76 .70	61.0 2.0	42.08 .54	49.4 2.0	58.50 .20	15.6 0.9
29.9	36.63 .25	46.3 1.3	59.53 .83	59.3 1.5	42.68 .65	47.5 1.6	58.72 .23	16.7 1.2
May 9.9	36.89 .27	47.7 1.5	60.41 .92	58.0 1.0	43.38 .74	46.2 1.1	58.97 .26	18.0 1.4
19.8	37.18 .30	49.3 1.7	61.38 .99	57.3 −0.4	44.16 .81	45.4 −0.5	59.24 .29	19.5 1.7
29.8	37.48 +.31	51.1 +1.9	62.40+1.04	57.2 +0.2	44.99 +.85	45.2 +0.1	59.54 +.31	21.3 +1.9
June 8.8	37.80 .32	53.1 2.0	63.45 1.04	57.7 0.7	45.86 .87	45.5 0.6	59.86 .32	23.2 2.0
18.8	38.13 .32	55.2 2.1	64.49 1.02	58.7 1.3	46.73 .86	46.4 1.2	60.19 .32	25.3 2.1
28.7	38.45 .32	57.3 2.1	65.50 .98	60.3 1.9	47.58 .83	47.9 1.7	60.51 .32	27.4 2.1
July 8.7	38.76 .30	59.5 2.1	66.45 .91	62.4 2.3	48.40 .79	49.9 2.2	60.83 .31	29.6 2.1
18.7	39.05 +.28	61.5 +2.0	67.32+ .82	64.9 +2.7	49.16 +.72	52.3 +2.6	61.12 +.29	31.6 +2.0
28.6	39.31 .25	63.5 1.9	68.10 .72	67.8 3.1	49.84 .64	55.1 3.0	61.40 .26	33.6 1.9
Aug. 7.6	39.55 .21	65.3 1.7	68.75 .59	71.1 3.4	50.43 .54	58.2 3.3	61.64 .23	35.5 1.8
17.6	39.74 .18	66.9 1.5	69.28 .46	74.6 3.6	50.92 .44	61.6 3.5	61.86 .19	37.2 1.6
27.6	39.90 .14	68.3 1.3	69.67 .32	78.3 3.8	51.31 .33	65.3 3.7	62.03 .16	38.7 1.4
Sept. 6.5	40.02 +.10	69.5 +1.1	69.92+ .18	82.1 +3.8	51.58 +.21	69.0 +3.8	62.17 +.12	40.0 +1.2
16.5	40.10 .06	70.5 0.8	70.02+ .03	86.0 3.8	51.74 +.10	72.8 3.8	62.27 .08	41.0 0.9
26.5	40.14 +.02	71.2 0.6	69.98− .11	89.8 3.7	51.78 −.02	76.6 3.7	62.33 .04	41.8 0.7
Oct. 6.4	40.14 −.01	71.7 0.4	69.80 .25	93.5 3.6	51.70 .13	80.3 3.6	62.35 +.01	42.4 0.5
16.4	40.12 .04	72.0 +0.2	69.48 .38	97.0 3.3	51.52 .24	83.7 3.4	62.35 −.02	42.8 0.3
26.4	40.07 −.06	72.1 0.0	69.03− .50	100.2 +3.0	51.23 −.34	87.0 +3.1	62.32 −.04	42.9 +0.1
Nov. 5.4	40.00 .08	72.0 −0.2	68.47 .61	103.0 2.6	50.84 .43	89.8 2.7	62.26 .06	42.9 −0.1
15.3	39.92 .09	71.8 0.3	67.81 .71	105.4 2.2	50.37 .51	92.3 2.2	62.19 .08	42.7 0.3
25.3	39.82 .10	71.4 0.5	67.06 .78	107.3 1.6	49.82 .58	94.3 1.7	62.10 .09	42.4 0.4
Dec. 5.3	39.72 .10	70.8 0.6	66.24 .84	108.7 1.1	49.21 .63	95.7 1.2	62.01 .10	41.9 0.5
15.3	39.62 −.10	70.2 −0.7	65.38− .87	109.5 +0.4	48.56 −.66	96.6 +0.6	61.91 −.10	41.4 −0.6
25.2	39.52 .10	69.5 0.7	64.51 .86	109.6 −0.2	47.90 .67	96.9 0.0	61.81 .10	40.7 0.7
35.2	39.43 −.09	68.8 −0.8	63.66− .84	109.1 −0.7	47.23 −.66	96.5 −0.6	61.70 −.10	40.0 −0.7

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cassiop.	22 Androm.	σ Androm.	ι Ceti.	6 Urs Min. S. P.	44 Piscium	π Androm.	ο Cassiop.
	° ′ 31 25	° ′ 44 30	° ′ 53 47	° ′ 99 24	° ′ 358 17	° ′ 88 38	° ′ 56 51	° ′ 42 17
	h m 0 3	h m 0 4	h m 0 12	h m 0 14	h m 0 13	h m 0 20	h m 0 31	h m 0 38
	s	s	s	s	s	s	s	s
Jan. 0.3	36.85 −.32	54.54 −.21	53.53 −.15	7.91 −.09	103.53+7.52	4.57 −.12	19.56 −.18	55.59 −.22
10.2	36.54 .29	54.34 .19	53.38 .15	7.82 .10	111.02 7.37	4.46 .10	19.40 .16	55.37 .22
20.2	36.26 .26	54.16 .17	53.24 .14	7.72 .09	118.27 6.99	4.37 .08	19.26 .14	55.15 .21
30.2	36.01 −.25	53.99 −.15	53.10 −.14	7.64 −.07	124.99+6.31	4.29 −.07	19.12 −.13	54.96 .19
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Aug 26.6	41.70 +.25	58.67 +.20	57.36 +.20	11.40 +.18	61.84−3.27	8.00 +.18	23.16 +.21	59.50 +.26
Sept 5.5	41.92 .18	58.84 .15	57.53 .15	11.55 .14	59.07 2.27	8.15 .14	23.35 .18	59.74 .21
15.5	42.06 .11	58.97 .10	57.67 .11	11.67 .10	57.30 1.25	8.28 .12	23.51 .14	59.92 .16
25.5	42.14 +.06	59.05 .06	57.75 .07	11.75 .06	56.58−0.18	8.36 .08	23.62 .10	60.06 .11
Oct. 5.5	42.18 .00	59.09 +.02	57.80 +.03	11.80 +.03	56.94+0.92	8.42 .04	23.69 .06	60.14 .07
15.4	42.14 −.05	59.08 −.02	57.82 .00	11.81 .00	58.43+2.03	8.44 +.01	23.73 +.02	60.19 +.02
25.4	42.07 .11	59.04 .06	57.80 −.04	11.80 −.03	61.00 3.10	8.44 −.01	23.73 −.01	60.20 .02
Nov. 4.4	41.92 .16	58.96 .10	57.74 .07	11.76 .06	64.64 4.14	8.41 .04	23.71 .04	60.15 .06
14.4	41.74 .20	58.84 .13	57.66 .10	11.69 .08	69.28 5.10	8.35 .06	23.64 .07	60.07 .10
24.3	41.52 .24	58.70 .15	57.55 .12	11.61 .09	74.83 5.93	8.27 .08	23.56 .09	59.96 .13
Dec 4.3	41.27 −.27	58.53 −.17	57.43 −.13	11.51 −.10	81.14+6.62	8.19 −.09	23.46 −.11	59.82 −.16
14.3	40.98 .29	58.36 .18	57.29 .14	11.42 .10	88.07 7.12	8.10 .09	23.34 .13	59.65 .18
24.2	40.69 .30	58.17 .19	57.14 .15	11.31 .11	95.38 7.39	8.01 .10	23.21 .14	59.46 .20
34.2	40.39 −.30	57.97 −.19	56.99 −.15	11.21 −.10	102.85+7.47	7.91 −.10	23.06 −.14	59.26 −.21

Mean Solar Date.	δ Piscium.	γ Cassiop.	μ Androm.	43 Cephei	κ Tucanæ	*f* Piscium.	κ Octantis, S. P.	ν Androm.
	° ′ 82 59	° ′ 29 51	° ′ 52 4	° ′ 4 18	° ′ 159 26	° ′ 86 56	° ′ 184 45	° ′ 49 7
	h m 0 43	h m 0 50	h m 0 50	h m 0 54	h m 1 12	h m 1 12	h m 1 23	h m 1 30
	s	s	s	s	s	s	s	s
Jan. 0.3	17.54 −.10	25.53 −.32	58.89 −.17	27.36−2.75	16.95 −.55	26.62 −.09	60.54+2.92	42.05 −.15
10.3	17.44 .11	25.21 .33	58.73 .16	24.61 2.73	16.41 .54	26.51 .10	63.48 2.92	41.90 .17
20.3	17.33 .11	24.88 .33	58.57 .16	21.89 2.69	15.87 .53	26.40 .11	66.40 2.86	41.71 .19
30.2	17.23 −.10	24.58 −.30	58.40 −.16	19.23−2.65	15.35 −.50	26.29 −.11	69.20+2.71	41.50 −.18
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 5.6	20.96 +.17	30.26 +.28	62.67 +.20	45.87+1.54	20.87 +.39	29.77 +.20	58.43 1.44	45.55 +.26
15.5	21.11 .13	30.51 .22	62.85 .16	47.25 1.17	21.22 .30	29.95 .16	57.18 1.03	45.80 .22
25.5	21.23 .10	30.71 .16	62.99 .12	48.21 .75	21.46 .20	30.09 .13	56.38 .58	45.99 .17
Oct. 5.5	21.31 .07	30.83 .10	63.10 .08	48.76+ .34	21.59 +.08	30.20 .09	56.02 − .11	46.16 .13
15.5	21.36 .04	30.90 +.04	63.15 .04	48.89− .09	21.61 −.03	30.27 .07	56.15+ .38	46.28 .10
25.4	21.39 +.01	30.92 −.02	63.19 +.01	48.58 .53	21.53 −.14	30.32 +.03	56.79+ .88	46.35 +.07
Nov. 4.4	21.38 −.02	30.86 .09	63.18 −.02	47.83 .97	21.33 .24	30.34 .00	57.92 1.38	46.40 +.03
14.4	21.34 .04	30.75 .14	63.13 .05	46.65 1.37	21.05 .33	30.32 − .03	59.55 1.82	46.40 .01
24.4	21.28 .06	30.58 .19	63.06 .08	45.09 1.75	20.67 .41	30.29 .05	61.56 2.21	46.37 .05
Dec. 4.3	21.20 .08	30.37 .23	62.96 .11	43.16 2.10	20.23 .46	30.23 .07	63.96 2.53	46.29 .08
14.3	21.12 −.09	30.12 −.27	62.84 −.13	40.89 −2.39	19.74 −.51	30.16 − .08	66.62+2.75	46.20 .12
24.3	21.02 .10	29.83 .30	62.69 .15	38.38 2.58	19.21 .54	30.07 .09	69.46 2.90	46.07 .14
34.2	20.92 −.10	29.53 −.32	62.54 −.16	35.73 2.69	18.66 −.55	29.98 .10	72.41+2.96	45.93 −.16

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Piscium.	ν Piscium.	ζ Ceti.	γ Androm.	β Trianguli.	4 Urs. Min., S. P.	γ Trianguli.	67 Ceti.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	78 23	85 2	100 51	48 10	55 30	348 2	56 38	96 54
	h m	h m	h m	h m	h m	h m	h m	h m
	1 31	1 36	1 46	1 57	2 3	2 9	2 11	2 11
	s	s	s	s	s	s	s	s
Jan. 0.3	35.77 −.11	1.90 −.09	20.54 −.10	31.56 −.14	22.06 −.12	14.59+1.03	8.68 −.11	48.73 −.09
10.3	35.66 .12	1.80 .11	20.43 .11	31.39 .17	21.93 .14	15.64 1.08	8.56 .14	48.64 .11
20.2	35.54 .12	1.69 .12	20.32 .12	31.23 .18	21.77 .16	16.74 1.12	8.41 .15	48.53 .12
30.2	35.42 .12	1.57 .12	20.19 .13	31.04 .19	21.62 .17	17.87 1.11	8.25 .16	48.39 .13
Feb. 9.2	35.31 .12	1.46 .11	20.05 .13	30.84 .18	21.45 .17	18.97 1.08	8.09 .17	48.26 .13
19.2	35.19 −.12	1.35 −.10	19.93 −.12	30.67 −.17	21.29 −.16	20.02+1.03	7.92 −.16	48.13 −.12
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 25.6	39.17 +.15	5.21 +.15	23.64 +.16	35.36 +.22	25.64 +.20	11.57− .56	12.17 +.21	51.68 +.18
Oct. 5.5	39.31 .12	5.34 .12	23.78 .13	35.56 .18	25.83 .17	11.07 .43	12.37 .18	51.84 .15
15.5	39.41 .08	5.45 .09	23.89 .10	35.71 .14	25.98 .13	10.73 .28	12.53 .14	51.96 .12
25.5	39.47 +.05	5.50 +.06	23.97 +.07	35.84 +.10	26.10 +.10	10.54− .10	12.66 +.11	52.07 +.09
Nov. 4.5	39.51 +.03	5.55 +.03	24.02 .04	35.91 .06	26.19 .07	10.54+ .09	12.74 .08	52.13 .06
14.4	39.53 .00	5.57 .00	24.03 +.01	35.95 +.02	26.23 +.03	10.72 .28	12.81 .05	52.17 +.03
24.4	39.50 −.02	5.56 −.03	24.02 −.02	35.96 −.02	26.24 −.01	11.10 .46	12.83 +.01	52.19 .00
Dec. 4.4	39.46 .05	5.51 .05	23.98 .04	35.91 .06	26.23 .04	11.63 .63	12.82 −.03	52.17 −.03
14.3	39.40 −.07	5.45 −.07	23.92 −.07	35.85 −.09	26.17 −.07	12.35+ .79	12.77 −.06	52.11 −.06
24.3	39.32 .09	5.37 .08	23.84 .10	35.74 .12	26.09 .10	13.20 .92	12.69 .09	52.05 .08
34.3	39.23 −.10	5.28 −.10	23.74 −.11	35.59 −.15	25.97 −.13	14.19+1.04	12.59 −.12	51.96 −.09

Mean Solar Date.	δ Hydri.	μ Hydri.	δ Ceti.	θ Persei.	σ Arietis.	47 Cephei.	ε Arietis.	β Persei. (*Algol.*)
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	159 8	169 34	90 7	41 13	75 21	11 0	69 5	49 27
	h m	h m	h m	h m	h m	h m	h m	h m
	2 19	2 33	2 34	2 37	2 45	2 52	2 53	3 1
	s	s	s	s	s	s	s	s
Jan. 0.3	56.90 −.52	57.62−1.12	10.21 −.08	6.84 −.14	46.10 −.07	18.31− .69	17.01 −.07	25.28 −.09
10.3	56.35 .55	56.44 1.22	10.12 .10	6.67 .18	46.02 .09	17.55 .82	16.93 .09	25.18 .13
20.3	55.78 .57	55.19 1.25	10.01 .12	6.47 .20	45.91 .11	16.67 .93	16.82 .12	25.03 .17
30.2	55.19 .57	53.93 1.25	9.88 .13	6.26 .22	45.79 .13	15.69 .99	16.69 .14	24.85 .19
Feb. 9.2	54.62 .56	52.69 1.23	9.75 .13	6.03 .23	45.65 .14	14.69 1.01	16.55 .15	24.66 .20
19.2	54.06 −.54	51.46−1.19	9.61 −.14	5.79 −.24	45.51 −.14	13.67−1.00	16.39 −.14	24.46 −.20
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 25.6	59.09 +.35	58.60+ .70	13.02 +.20	10.59 +.29	49.01 +.22	25.68+ .94	19.96 +.23	28.56 +.28
Oct. 5.6	59.39 .25	59.18 .49	13.20 .17	10.87 .26	49.22 .19	26.56 .82	20.17 .20	28.83 .25
15.5	59.59 .15	59.58 .28	13.36 .14	11.12 .22	49.39 .16	27.31 .68	20.37 .18	29.08 .22
25.5	59.69 +.05	59.74+ .03	13.49 +.11	11.30 +.17	49.54 +.13	27.91+ .51	20.54 +.15	29.29 +.18
Nov. 4.5	59.68 −.06	59.67− .18	13.59 .09	11.45 .12	49.66 .11	28.32 .32	20.67 .12	29.45 .14
14.5	59.56 .18	59.38 .40	13.66 .05	11.55 .08	49.75 .08	28.55+ .16	20.77 .08	29.57 .11
24.4	59.32 .28	58.87 .61	13.69 +.02	11.61 +.03	49.80 .04	28.64− .02	20.83 .05	29.66 .07
Dec. 4.4	59.00 .36	58.17 .78	13.70 −.01	11.61 −.02	49.82 +.01	28.50 .23	20.86 +.02	29.71 +.03
14.4	58.60 −.44	57.31− .96	13.67 −.04	11.56 −.07	49.82 −.02	28.16− .42	20.86 −.01	29.71 −.01
24.4	58.13 .49	56.28 1.09	13.62 .06	11.47 .11	49.78 .05	27.65 .59	20.82 .04	29.66 .06
34.3	57.61 −.54	55.15−1.17	13.55 −.08	11.34 −.16	49.71 −.08	26.98− .73	20.76 −.08	29.57 −.11

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Hydri.	ρ Octantis, S. P.	f Tauri.	γ Camelop.	γ Hydri.	ε Persei.	A¹ Tauri.	ε Persei.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	167 46	185 53	77 25	18 59	164 33	50 17	68 12	42 34
	h m	h m	h m	h m	h m	h m	h m	h m
	3 18	3 19	3 25	3 39	3 48	3 50	3 58	4 1
	s	s	s	s	s	s	s	s
Jan. 0.4	38.57− .86	9.11+2.16	9.13 −.06	25.57 −.25	55.57 −.60	54.03 −.05	34.31 −.02	8.48 −.05
10.3	37.64 .98	11.42 2.37	9.06 .08	25.26 .56	54.90 .71	53.95 .09	34.27 .07	8.41 .10
20.3	36.61 1.06	13.85 2.49	8.97 .11	24.85 .44	54.15 .80	53.84 .13	34.18 .10	8.29 .15
30.3	35.52 1.08	16.39 2.54	8.85 .13	24.37 .50	53.31 .85	53.68 .17	34.07 .12	8.11 .19
Feb 9.3	34.42 1.10	18.93 2.55	8.72 .14	23.84 .54	52.45 .88	53.50 .19	33.93 .14	7.90 .22
19.3	33.32−1.07	21.49+2.50	8.57 −.15	23.28 −.56	51.54 −.91	53.31 −.20	33.78 −.16	7.68 −.24
29.2	32.25−1.05	23.92+2.39	8.41 −.16	22.72 −.55	50.63 −.90	53.10 −.21	33.60 −.17	7.43 −.25
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 5.6	38.03+ .61	18.22−1.00	11.93 +.23	30.68 +.64	54.38 +.56	57.18 +.31	36.99 +.28	11.79 +.34
15.6	38.55 .43	17.38 .67	12.15 .20	31.27 .56	54.90 .46	57.47 .28	37.28 .26	12.12 .32
25.5	38.89+ .24	16.89 −.27	12.32 +.17	31.80 +.46	55.29 +.33	57.73 +.25	37.52 +.22	12.42 +.29
Nov 4.5	39.03+ .06	16.84+ .17	12.48 .14	32.22 .37	55.55 .18	57.96 .21	37.72 .19	12.70 .25
14.5	39.00− .13	17.22 .59	12.62 .11	32.55 .28	55.65 +.03	58.14 .17	37.89 .16	12.93 .20
24.5	38.77 .32	18.02 1.00	12.72 .08	32.77 .16	55.61 −.11	58.31 .13	38.03 .12	13.10 .15
Dec. 4.4	38.36 .50	19.22 1.39	12.76 .05	32.87 +.05	55.43 .25	58.41 .09	38.13 .08	13.24 .10
14.4	37.77 − .67	20.79+1.74	12.79 +.01	32.87 −.06	55.10 −.41	58.47 +.04	38.19 +.05	13.31 +.04
24.4	37.03 .81	22.69 2.03	12.79 −.02	32.74 .19	54.61 .54	58.48 −.01	38.22 +.01	13.32 .01
34.4	36.15− .92	24.85+2.26	12.74 −.06	32.49 −.29	54.02 −.64	58.44 −.06	38.20 −.04	13.28 − .07

Mean Solar Date.	o¹ Eridani.	η Urs. Min., S. P.	δ Mensæ.	m Persei.	τ Tauri.	ι Tauri.	ζ Aurigæ.	β Eridani.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	97 7	346 0	170 27	47 10	67 15	71 20	49 5	95 13
	h m	h m	h m	h m	h m	h m	h m	h m
	4 6	4 20	4 24	4 26	4 36	4 45	4 55	5 2
	s	s	s	s	s	s	s	s
Jan 0.4	48.84 −.02	28.59 +.46	68.19− .92	7.77 −.01	1.84 +.01	19.09 +.02	14.55 +.01	45.90 +.02
10.4	48.79 .06	29.12 .61	67.17 1.11	7.73 .06	1.83 − .03	19.09 −.02	14.55 .03	45.90 .02
20.4	48.71 .09	29.82 .75	65.98 1.26	7.64 .11	1.77 .07	19.04 .06	14.49 .08	45.85 .06
30.3	48.60 .12	30.62 .84	64.65 1.38	7.50 .16	1.67 .11	18.96 .10	14.39 .13	45.76 .09
Feb. 9.3	48.46 .14	31.50 .91	63.23 1.45	7.32 .19	1.55 .14	18.84 .13	14.23 .17	45.65 .13
19.3	48.31 −.16	32.43 +.94	61.76−1.50	7.12 −.21	1.39 −.16	18.69 −.16	14.04 − .20	45.51 .16
29.3	48.14 .17	33.38 .93	60.24 1.50	6.91 .22	1.22 .17	18.53 .16	13.84 .21	45.34 .17
Mar. 10.2	47.98 −.16	34.30 +.87	58.76−1.45	6.69 −.22	1.05 −.18	18.36 −.18	13.62 − .22	45.17 .18
. .	. . .	. . .	. . .	. . .	. . .	. . .	. .	. .
Oct 15.6	51.24 +.22	27.62 −.75	63.47+ .86	11.07 +.32	4.59 +.27	21.70 +.27	17.57 +.35	47.94 +.25
25.6	51.45 +.20	26.94 −.61	64.22+ .65	11.38 +.30	4.86 +.25	21.96 +.25	17.90 +.32	48.18 +.24
Nov. 4.6	51.64 .17	26.40 .47	64.77 .43	11.66 .27	5.10 .23	22.21 .23	18.21 .30	48.42 .22
14.5	51.78 .14	26.01 .31	65 08+ .19	11.90 .23	5.31 .20	22.43 .20	18.48 .26	48.61 19
24.5	51.91 .11	25.78 −.15	65.15 − .05	12.11 .18	5.48 .16	22.59 .16	18.72 .22	48.79 .16
Dec 4.5	52.00 .07	25.72 +.02	64.97 .31	12.27 .13	5.62 .13	22.74 .13	18.90 .17	48.94 .13
14.5	52.04 +.03	25.83 +.20	64.53− .56	12.36 +.08	5.71 +.09	22.86 +.09	19.06 +.12	49.05 +.09
24.4	52.05 −.01	26.12 .38	63.86 .80	12.42 +.03	5.77 .05	22.92 .05	19.14 .07	49.10 .05
34.4	52.03 −.04	26.59 +.54	62.94−1.02	12.42 −.03	5.79 +.01	22.95 +.01	19.18 +.01	49.13 +.01

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Orionis.	χ Aurigæ.	Groombr. 944.	κ Orionis.	ν Aurigæ.	δ Doradus.	β Aurigæ.	θ Aurigæ.
	° ′ 96 57	° ′ 57 53	° ′ 4 51	° ′ 99 42	° ′ 50 53	° ′ 155 46	° ′ 45 4	° ′ 52 48
	h m 5 12	h m 5 25	h m 5 28	h m 5 42	h m 5 44	h m 5 44	h m 5 51	h m 5 52
	s	s	s	s	s	s	s	s
Jan. 0.5	35.08 +.03	59.64 +.06	57.51− .14	51.16 +.05	19.13 +.09	38.70 −.13	56.52 +.10	40.06 +.10
10.4	35.09 −.01	59.68 +.02	57.09 .66	51.20 +.01	19.18 +.03	38.51 .23	56.58 +.03	40.12 +.04
20.4	35.05 .06	59.67 −.03	56.19 1.13	51.18 −.04	19.18 −.03	38.23 .32	56.58 −.03	40.13 −.02
30.4	34.97 .10	59.60 .08	54.83 1.56	51.12 .08	19.11 .08	37.86 .40	56.51 .09	40.07 .07
Feb. 9.3	34.85 .13	59.50 .13	53.08 1.91	51.01 .12	19.01 .13	37.43 .47	56.41 .14	39.99 .11
19.3	34.70 −.15	59.34 −.16	51.02−2.16	50.88 −.15	18.85 −.17	36.92 −.52	56.23 −.19	39.85 −.16
29.3	34.54 .16	59.17 .18	48.76 2.31	50.72 .16	18.67 .19	36.39 .55	56.03 .21	39.66 .19
Mar. 10.3	34.37 .17	58.98 .19	46.40 2.37	50.54 .17	18.46 .20	35.82 .57	55.81 .23	39.47 .20
20.3	34.20 −.17	58.78 −.19	44.03−2.34	50.37 −.17	18.25 −.21	35.25 −.56	55.57 −.24	39.27 −.21
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 25.6	37.28 +.23	62.57 +.31	69.14+2.60	53.12 +.27	22.07 +.36	37.56 +.46	59.55 +.39	42.91 +.35
Nov. 4.6	37.52 .22	62.87 .29	71.61 2.30	53.38 .24	22.42 .33	38.00 .40	59.93 .37	43.25 .33
14.6	37.74 .20	63.14 .26	73.73 1.97	53.61 .22	22.74 .30	38.35 .31	60.28 .34	43.57 .30
24.5	37.93 .17	63.39 .23	75.54 1.59	53.82 .20	23.02 .27	38.62 .23	60.60 .30	43.85 .27
Dec. 4.5	38.07 .13	63.61 .19	76.90 1.13	54.00 .16	23.27 .22	38.80 .13	60.87 .25	44.11 .23
14.5	38.18 +.09	63.77 +.14	77.79+ .64	54.15 +.12	23.46 +.17	38.88 +.05	61.11 +.20	44.32 +.18
24.5	38.25 .06	63.89 .10	78.18+ .14	54.24 .08	23.61 .13	38.86 −.05	61.27 .15	44.47 .13
34.4	38.28 +.01	63.96 +.04	78.08− .33	54.29 +.05	23.70 +.06	38.74 −.17	61.37 +.07	44.58 +.07

Mean Solar Date.	η Geminor.	ψ¹ Aurigæ.	ν Geminor.	χ Draconis, S. P.	ε Geminor.	ψ⁶ Aurigæ.	θ Geminor.	ζ Mensæ.
	° ′ 67 28	° ′ 40 40	° ′ 69 43	° 342 41	° ′ 64 46	° ′ 46 19	° ′ 55 55	° ′ 170 42
	h m 6 8	h m 6 16	h m 6 22	h m 6 22	h m 6 37	h m 6 39	h m 6 45	h m 6 48
	s	s	s	s	s	s	s	s
Jan. 0.5	38.03 +.10	56.16 +.14	49.26+ .11	50.96 +.03	34.09 +.14	17.14 +.16	58.40 +.16	49.13− .16
10.5	38.10 +.05	56.26 +.06	49.34 .06	51.06 .16	34.20 .09	17.27 .10	58.53 .10	48.82 .43
20.4	38.13 .00	56.29 −.01	49.38+ .02	51.28 .30	34.25 +.03	17.32 +.03	58.60 +.04	48.27 .67
30.4	38.10 −.05	56.24 .07	49.37− .03	51.67 .44	34.26 −.02	17.32 −.03	58.61 −.02	47.48 .90
Feb. 9.4	38.02 .09	56.15 .13	49.31 .08	52.16 .53	34.20 .07	17.25 .09	58.56 .07	46.48 1.09
19.4	37.92 −.12	55.99 −.18	49.21− .11	52.73 +.62	34.11 −.11	17.13 −.15	58.47 −.12	45.30−1.25
29.3	37.78 .15	55.78 .22	49.08 .15	53.41 .71	33.99 .14	16.96 .18	58.33 .16	43.98 1.38
Mar. 10.3	37.61 .17	55.54 .25	48.91 .17	54.15 .75	33.82 .17	16.77 .20	58.15 .18	42.54 1.48
20.3	37.43 .18	55.28 .26	48.74 .17	54.90 .76	33.65 .18	16.56 .22	57.96 .19	41.03 1.53
30.2	37.26 .17	55.01 .26	48.57 .16	55.67 .77	33.47 .18	16.32 .23	57.78 .19	39.49 1.54
Apr. 9.2	37.09 −.15	54.76 −.24	48.41− .15	56.43 +.76	33.30 −.17	16.09 −.23	57.57 −.19	37.95−1.53
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nov. 14.6	41.07 +.28	59.94 +.38	52.17+ .28	51.13 −.57	37.05 +.30	20.56 +.37	61.54 +.34	41.94+ .96
24.6	41.34 .25	60.31 .35	52.45 .26	50.62 .45	37.34 .28	20.92 .34	61.87 .31	42.79 .74
Dec. 4.6	41.58 .22	60.63 .30	52.70 .23	50.23 .33	37.61 .25	21.24 .30	62.16 .28	43.42 .52
14.5	41.77 +.17	60.90 +.24	52.91+ .19	49.95 −.21	37.84 +.21	21.52 +.25	62.42 +.24	43.82+ .27
24.5	41.92 .13	61.11 .18	53.08 .14	49.81 −.06	38.02 .17	21.75 .20	62.64 .19	43.95 .00
34.5	42.03 +.09	61.26 +.11	53.19+ .10	49.84 +.08	38.17 +.12	21.92 +.14	62.79 +.13	43.81− .25

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Geminor.	63 Aurigæ.	25 Camelop.	γ^2 Volantis.	β Can. Min.	26 Lyncis.	Groombr. 1374.	ω^1 Cancri.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	69 17	50 31	7 23	160 20	81 30	42 10	15 48	64 19
	h m	h m	h m	h m	h m	h m	h m	h m
	6 57	7 4	7 9	7 9	7 21	7 47	7 47	7 54
	s	s	s	s	s	s	s	s
Jan. 0.5	58.51 +.16	32.65 +.19	25.86+ .70	41.11 +.04	32.56 +.17	11.25 +.26	51.33 +.49	40.45 +.22
10.5	58.64 .10	32.80 .13	26.38+ .34	41.09 −.08	32.70 .12	11.48 .19	51.77 .33	40.63 .17
20.5	58.71 +.05	32.89 +.07	26.53− .01	40.95 .20	32.79 .07	11.63 .12	52.00 +.16	40.78 .11
30.4	58.73 .00	32.92 .00	26.36 .35	40.70 .31	32.83 +.02	11.72 +.06	52.10 .00	40.85 +.05
Feb. 9.4	58.71 −.05	32.88 −.06	25.83 .68	40.32 .42	32.82 −.03	11.73 −.02	52.01 −.17	40.88 .00
19.4	58.63 −.10	32.80 −.11	25.00− .96	39.85 −.51	32.75 −.07	11.67 −.09	51.77 −.31	40.84 −.05
29.4	58.51 .13	32.66 .16	23.91 1.20	39.29 .59	32.66 .10	11.56 .15	51.39 .44	40.77 .09
Mar. 10.3	58.38 .15	32.48 .19	22.61 1.37	38.67 .65	32.54 .13	11.38 .19	50.89 .55	40.66 .14
20.3	58.21 .16	32.29 .20	21.17 1.47	38.00 .68	32.40 .15	11.18 .21	50.30 .63	40.51 .16
30.3	58.04 .17	32.08 .21	19.68 1.52	37.31 .69	32.22 .16	10.95 .23	49.64 .68	40.35 .16
Apr. 9.2	57.87 −.16	31.87 −.20	18.14−1.51	36.62 −.68	32.06 −.16	10.70 −.24	48.95 −.69	40.18 −.16
19.2	57.72 −.16	31.68 −.18	16.66−1.43	35.95 −.65	31.92 −.14	10.46 −.23	48.27 −.68	40.03 −.15
. .	. . .	. .	. . .	. . .	. . .	. . .	. . .	. . .
Nov. 24.6	61.58 +.29	36.16 +.35	35.39+1.62	39.67 +.47	35.28 +.29	14.73 +.44	56.51 +.91	43.37 +.34
Dec. 4.6	61.86 .26	36.49 .31	36.94 1.44	40.09 .37	35.55 .26	15.15 .39	57.38 .83	43.70 .31
14.6	62.10 +.22	36.78 +.27	38.27+1.18	40.41 +.26	35.80 +.23	15.51 +.35	58.16 +.72	43.99 +.28
24.5	62.29 .18	37.02 .23	39.29 .86	40.61 +.13	36.02 .19	15.83 .31	58.81 .59	44.25 .25
34.5	62.45 +.14	37.21 +.16	39.99+ .56	40.67 .00	36.18 +.15	16.10 +.24	59.33 +.44	44.48 +.20

Mean Solar Date.	ζ^1 Cancri.	β Cancri.	30 Monocerotis.	θ Chamæleontis.	σ Hydræ.	γ Cancri.	σ^2 Cancri. (*mean.*)	θ Hydræ.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	72 2	80 30	93 34	167 9	86 18	68 9	59 2	87 15
	h m	h m	h m	h m	h m	h m	h m	h m
	8 6	8 10	8 20	8 23	8 33	8 37	8 47	9 8
	s	s	s	s	s	s	s	s
Jan. 0.6	16.78 +.22	54.32 +.21	29.47 +.21	49.20+ .35	21.13 +.23	18.02 +.25	56.10 +.28	58.81 +.25
10.5	16.96 .16	54.50 .17	29.65 .16	49.44+ .16	21.32 .18	18.25 .20	56.35 .23	59.05 .21
20.5	17.11 .12	54.65 .12	29.79 .11	49.51− .03	21.49 .13	18.42 .15	56.55 .17	59.24 .16
30.5	17.20 .07	54.73 .06	29.88 .06	49.38 .21	21.60 .09	18.55 .10	56.69 .11	59.37 .11
Feb. 9.5	17.24 +.02	54.77 +.01	29.91 +.01	49.08 .38	21.65 +.04	18.61 +.05	56.77 +.06	59.46 .07
19.4	17.23 −.03	54.76 −.04	29.90 −.03	48.62− .54	21.66 −.02	18.62 .00	56.81 .00	59.50 +.02
29.4	17.16 .08	54.70 .08	29.84 .07	48.00 .69	21.61 .06	18.59 −.05	56.77 −.05	59.49 −.03
Mar. 10.4	17.06 .12	54.60 .11	29.75 .10	47.25 .80	21.53 .09	18.52 .09	56.70 .09	59.44 .07
20.4	16.94 .14	54.48 .13	29.64 .12	46.40 .89	21.43 .12	18.40 .12	56.59 .13	59.35 .09
30.3	16.78 .15	54.34 .14	29.50 .14	45.47 .96	21.30 .14	18.27 .14	56.45 .15	59.25 .11
Apr. 9.3	16.63 −.16	54.20 −.14	29.35 −.15	44.49− .99	21.16 −.15	18.11 −.15	56.29 −.16	59.13 −.12
19.3	16.48 .15	54.05 .15	29.20 .15	43.49 1.01	21.02 .14	17.96 .15	56.12 .17	59.00 .13
29.2	16.34 .13	53.90 .14	29.05 .14	42.47 1.02	20.88 .13	17.82 .14	55.95 .15	58.86 .13
May 9.2	16.21 −.12	53.77 −.12	28.92 −.14	41.47−0.99	20.74 −.11	17.68 −.13	55.81 −.13	58.73 −.12

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Argus.	α Lyncis.	10 Leonis Minoris.	ο Leonis.	ζ Chamæleontis.	19 Leonis Minoris.	π Leonis.	λ Ursæ Majoris.
	° ′ 159 17	° ′ 55 10	° ′ 53 8	° ′ 79 38	° ′ 170 28	° ′ 48 27	° ′ 81 27	° ′ 46 34
	h m 9 12	h m 9 14	h m 9 27	h m 9 35	h m 9 36	h m 9 51	h m 9 54	h m 10 10
	s	s	s	s	s	s	s	s
Jan. 0.6	5.55 +.40	45.26 +.31	53.33 +.33	37.55 +.28	59.99+ .85	21.11 +.36	44.50 +.28	51.60 +.38
10.6	5.88 .28	45.54 .27	53.62 .28	37.81 .24	60.72 .63	21.45 .32	44.77 .26	51.97 .35
20.6	6.11 .17	45.78 .21	53.89 .23	38.03 .20	61.25 .40	21.74 .27	45.01 .21	52.29 .30
30.6	6.23 +.06	45.96 .15	54.08 .17	38.20 .15	61.52+ .16	21.98 .21	45.18 .16	52.54 .24
Feb. 9.5	6.23 −.07	46.08 .09	54.22 .11	38.33 .10	61.57− .07	22.13 .14	45.33 .12	52.74 .17
19.5	6.09 −.18	46.12 +.03	54.29 +.05	38.39 +.05	61.37− .30	22.24 +.08	45.41 +.07	52.87 +.10
29.5	5.87 .27	46.13 −.02	54.30 .00	38.42 .00	60.97 .51	22.28 +.02	45.46 +.02	52.94 +.05
Mar. 10.4	5.54 .37	46.07 .07	54.26 −.05	38.39 −.04	60.36 .70	22.27 −.03	45.46 −.02	52.94 −.01
20.4	5.13 .44	45.98 .12	54.17 .11	38.32 .07	59.58 .86	22.19 .08	45.40 .06	52.88 .07
30.4	4.67 .49	45.85 .15	54.05 .15	38.24 .10	58.64 1.01	22.08 .13	45.33 .08	52.78 .12
Apr. 9.3	4.15 −.53	45.69 −.16	53.90 −.16	38.13 −.12	57.57−1.12	21.93 −.16	45.24 −.10	52.65 −.15
19.3	3.61 .55	45.52 .17	53.73 .17	38.01 .13	56.41 1.20	21.76 .17	45.12 .11	52.48 .17
29.3	3.05 .57	45.35 .17	53.55 .17	37.88 .13	55.17 1.25	21.58 .18	45.00 .12	52.29 .18
May 9.3	2.47 .57	45.18 .16	53.39 .16	37.75 .12	53.92 1.27	21.40 .18	44.88 .12	52.10 .19
19.2	1.91 −.55	45.03 −.15	53.23 −.15	37.63 −.11	52.63−1.27	21.21 −.17	44.76 −.11	51.92 −.18

Mean Solar Date.	μ Hydræ.	β Leonis Minoris.	α Antliæ.	β Octantis, S. P.	41 Leonis Minoris.	δ^2 Chamæleontis.	46 Leonis Minoris.	Groombr. 1706.
	° ′ 106 18	° ′ 52 46	° ′ 120 32	° ′ 188 4	° ′ 66 16	° ′ 170 0	° ′ 55 13	° ′ 11 40
	h m 10 21	h m 10 21	h m 10 22	h m 10 35	h m 10 37	h m 10 44	h m 10 47	h m 10 51
	s	s	s	s	s	s	s	s
Jan. 20.6	5.29 +.23	54.71 +.28	25.07 +.23	22.88− .67	47.75 +.27	51.60+ .78	32.06 +.30	46.42 +.93
30.6	5.49 .18	54.97 .23	25.28 .18	22.33 .43	47.99 .22	52.27 .57	32.33 .25	47.27 .76
Feb. 9.6	5.65 .13	55.16 .17	25.43 .13	22.03− .17	48.18 .17	52.74 .37	32.55 .19	47.94 .57
19.5	5.76 .08	55.30 .11	25.54 .08	21.99+ .06	48.32 .12	53.00+ .16	32.71 .14	48.40 .36
29.5	5.81 +.04	55.38 +.06	25.58 +.03	22.16 .29	48.42 .07	53.06− .04	32.82 .08	48.66 +.15
Mar. 10.5	5.82 .00	55.40 .00	25.58 −.01	22.57+ .53	48.45 +.02	52.91− .25	32.86 +.03	48.70 −.06
20.4	5.80 −.04	55.38 −.05	25.55 .05	23.23 .76	48.44 −.02	52.57 .43	32.87 −.02	48.53 .27
30.4	5.73 .07	55.30 .09	25.47 .09	24.09 .96	48.39 .05	52.06 .59	32.81 .07	48.17 .45
Apr. 9.4	5.65 .09	55.18 .12	25.37 .12	25.15 1.15	48.32 .08	51.39 .73	32.73 .09	47.63 .61
19.4	5.55 .10	55.05 .14	25.25 .14	26.39 1.31	48.23 .10	50.61 .86	32.63 .12	46.96 .73
29.3	5.44 −.11	54.88 −.15	25.11 −.15	27.77+1.45	48.12 −.12	49.68− .97	32.50 −.14	46.17 −.83
May 9.3	5.32 .12	54.72 .16	24.96 .15	29.28 1.55	47.99 .13	48.66 1.04	32.35 .14	45.30 .89
19.3	5.20 .13	54.56 .15	24.82 .14	30.87 1.63	47.87 .12	47.60 1.09	32.21 .14	44.39 .92
29.3	5.08 .12	54.41 .14	24.67 .14	32.53 1.66	47.75 .11	46.48 1.12	32.06 .14	43.47 .91
June 8.2	4.96 −.10	54.27 −.13	24.54 −.13	34.19+1.63	47.63 −.10	45.34−1.15	31.92 −.13	42.57 −.88

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Octantis.	p³ Leonis.	ψ Urs. Maj.	ν Urs. Maj.	ξ Hydræ.	χ Urs. Maj.	π Virginis.	ε Corvi.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	174 2	87 29	44 56	56 20	121 17	41 39	82 48	112 2
	h m	h m	h m	h m	h m	h m	h m	h m
	10 59	11 1	11 3	11 12	11 27	11 40	11 55	12 4
	s	s	s	s	s	s	s	s
Feb 9.6	69.45+ .73	37.87 +.18	52.15 +.25	54.53 +.22	54.91 +.21	36.71 +.29	34.51 +.23	48.20 +.24
19.6	70.00 .37	38.02 .13	52.36 .17	54.73 .16	55.09 .16	36.97 .23	34.72 .18	48.42 .19
29.5	70.19+ .04	38.14 .09	52.50 .10	54.86 .10	55.23 .11	37.16 .16	34.88 .14	48.59 .15
Mar. 10.5	70.09− .28	38.19 +.04	52.56 +.04	54.93 .05	55.31 .06	37.28 .09	35.00 .09	48.72 .11
20.5	69.64 .60	38.21 .00	52.58 −.01	54.96 +.01	55.35 +.02	37.34 +.03	35.06 .05	48.81 .07
30.4	68.90− .88	38.19 −.03	52.53 −.07	54.95 −.03	55.36 −.01	37.34 −.03	35.11 +.03	48.85 +.03
Apr. 9.4	67.89 1.13	38.15 .06	52.44 .10	54.89 .06	55.33 .04	37.28 .08	35.12 .00	48.87 .00
19.4	66.65 1.37	38.08 .08	52.33 .13	54.80 .09	55.26 .07	37.18 .12	35.10 −.03	48.86 −.02
29.4	65.16 1.57	38.00 .09	52.17 .17	54.69 .11	55.18 .09	37.05 .15	35.05 .06	48.82 .05
May 9.3	63.52 1.72	37.90 .10	51.99 .18	54.57 .13	55.08 .11	36.88 .17	34.98 .07	48.76 .07
19.3	61.73−1.84	37.80 −.10	51.80 −.19	54.43 −.14	54.96 −.12	36.69 −.19	34.91 −.08	48.68 −.08
29.3	59.84 1.91	37.70 .10	51.61 .19	54.29 .15	54.84 .13	36.50 .20	34.83 .09	48.60 .09
June 8.3	57.92 1.91	37.60 .09	51.42 .18	54.14 .14	54.69 .14	36.29 .20	34.73 .10	48.50 .10
18.2	56.01−1.86	37.51 −.09	51.25 −.17	54.00 −.13	54.56 −.13	36.09 −.19	34.63 −.09	48.40 −.10

Mean Solar Date.	2 Can. Ven.	6 Urs. Min.	δ² Corvi.	β Can. Ven.	γ Virginis, (*mean.*)	31 Comæ Berenices.	γ Cassiop., S P	43 Cephei., S P.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	48 46	1 43	105 56	48 5	90 53	61 54	330 9	355 42
	h m	h m	h m	h m	h m	h m	h m	h m
	12 10	12 14	12 24	12 28	12 36	12 46	12 50	12 54
	s	s	s	s	s	s	s	s
Feb. 9.6	57.53 +.30	71.18+5.42	30.75 +.25	50.74 +.31	25.13 +.26	40.11 +.29	24.30 - .29	16.70−2.31
19.6	57.80 .24	76.08 4.30	30.98 .21	51.02 .26	25.37 .22	40.37 .24	24.04 .22	14.59 1.91
29.6	58.01 .18	79.77 3.04	31.17 .16	51.26 .21	25.56 .17	40.59 .20	23.86 .15	12.89 1.48
Mar 10.5	58.16 .12	82.18 1.69	31.31 .12	51.43 .15	25.71 .13	40.77 .16	23.74 .08	11.63 1.00
20.5	58.26 .08	83.15+ .27	31.42 .09	51.55 .10	25.82 .10	40.91 .11	23.69 -.02	10.89− .47
30.5	58.31 +.03	82.73−1.10	31.48 +.06	51.62 +.05	25.91 +.07	40.99 +.06	23.70 +.06	10.69+ .09
Apr 9.5	58.31 −.01	80.95 2.43	31.52 +.03	51.63 .00	25.95 +.03	41.04 +.03	23.82 .16	11.07 .62
19.4	58.26 .05	77.88 3.64	31.53 .00	51.61 −.04	25.97 .00	41.05 −.01	24.02 .24	11.93 1.13
29.4	58.18 .09	73.66 4.71	31.52 −.03	51.53 .07	25.96 −.02	41.03 .04	24.29 .32	13.33 1.61
May 9.4	58.07 .12	68.47 5.60	31.46 .05	51.44 .10	25.92 .04	40.97 .06	24.66 .39	15.15 2.02
19.4	57.94 −.14	62.48−6.29	31.40 −.07	51.32 −.13	25.87 −.05	40.91 −.08	25.07 +.43	17.37+2.37
29.3	57.79 .16	55.89 6.77	31.33 .08	51.17 .15	25.81 .06	40.82 .10	25.52 .48	19.90 2.65
June 8.3	57.62 .17	48.94 7.05	31.25 .09	51.01 .16	25.74 .08	40.71 .11	26.03 .54	22.66 2.84
18.3	57.45 −.16	41.79−7.14	31.16 −.09	50.83 −.17	25.65 −.08	40.60 −.11	26.59 +.56	25.58+2.96

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Muscæ.	ε Virginis.	20 Can. Ven.	κ Octantis.	B.A.C. 4536.	m Virginis.	θ Apodis.	π Hydræ.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	160 59	78 29	48 53	175 15	52 17	98 11	166 18	116 11
	h m	h m	h m	h m	h m	h m	h m	h m
	12 55	12 57	13 12	13 24	13 30	13 36	13 55	14 0
	s	s	s	s	s	s	s	s
Feb. 29.6	11.06 +.45	2.21 +.20	55.47 +.25	16.34+1.90	11.64 +.25	11.07 +.23	15.28 +.83	28.62 +.24
Mar. 10.6	11.46 .35	2.38 .16	55.70 .20	18.06 1.54	11.88 .21	11.28 .19	16.05 .71	28.86 .23
20.6	11.76 .25	2.52 .12	55.87 .15	19.41 1.17	12.07 .16	11.45 .16	16.70 .59	29.09 .20
30.5	11.97 .16	2.62 .08	55.99 .10	20.40 .79	12.20 .12	11.60 .13	17.23 .47	29.27 .17
Apr. 9.5	12.07 +.06	2.68 .05	56.06 .06	20.99 .40	12.30 .08	11.72 .10	17.63 .33	29.41 .13
19.5	12.09 −.03	2.71 +.02	56.09 +.01	21.21+ .02	12.34 +.03	11.80 +.07	17.89 +.19	29.53 +.10
29.4	12.01 .13	2.71 −.01	56.08 −.03	21.03− .37	12.36 .00	11.84 .04	18.02 +.06	29.61 .07
May 9.4	11.84 .21	2.70 .03	56.02 .06	20.47 .74	12.33 −.04	11.87 +.01	18.01 −.07	29.66 .04
19.4	11.59 .28	2.66 .05	55.93 .09	19.55 1.09	12.27 .07	11.87 −.01	17.89 .19	29.69 +.01
29.4	11.29 .35	2.59 .07	55.83 .12	18.30 1.40	12.18 .10	11.85 .03	17.63 .31	29.69 −.01
June 8.3	10.90 −.41	2.51 −.08	55.69 −.14	16.76−1.68	12.07 −.12	11.81 −.05	17.27 −.43	29.67 −.04
18.3	10.47 .45	2.43 .09	55.54 .16	14.94 1.92	11.94 .14	11.75 .08	16.78 .52	29.60 .07
28.3	9.99 .47	2.33 .10	55.37 .17	12.94 2.10	11.80 .15	11.66 .09	16.23 .60	29.53 .09
July 8.3	9.53 −.45	2.23 −.10	55.19 −.18	10.75−2.24	11.63 −.16	11.57 −.10	15.59 −.67	29.43 −.10

Mean Solar Date.	d Bootis.	κ Virginis.	4 Urs. Min.	δ Octantis.	λ Bootis.	λ Virginis.	μ Hydri, S. P.	α Apodis.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	64 25	99 47	11 58	173 11	43 26	102 54	190 26	168 36
	h m	h m	h m	h m	h m	h m	h m	h m
	14 5	14 7	14 9	14 10	14 12	14 13	14 33	14 35
	s	s	s	s	s	s	s	s
Mar. 20.6	41.89 +.20	23.07 +.20	22.49 +.59	23.76+1.23	28.73 +.22	31.10 +.20	48.40− .82	2.45 +.88
30.6	42.05 .15	23.24 .16	22.98 .39	24.87 .99	28.92 .17	31.28 .17	47.65 .67	3.26 .75
Apr. 9.5	42.18 .11	23.39 .13	23.27 .19	25.74 .73	29.08 .13	31.43 .14	47.06 .50	3.93 .59
19.5	42.27 .08	23.50 .10	23.37 +.01	26.32 .44	29.18 .07	31.56 .11	46.65 .31	4.45 .44
29.5	42.33 .05	23.59 .07	23.30 −.17	26.65+ .18	29.22 +.03	31.65 .08	46.44− .11	4.80 .28
May 9.5	42.36 +.02	23.63 +.04	23.03 −.35	26.69− .09	29.23 −.02	31.71 +.05	46.42+ .08	4.99 +.12
19.4	42.36 −.01	23.67 +.02	22.61 .50	26.47 .35	29.18 .07	31.74 +.02	46.61 .28	5.03 −.05
29.4	42.32 .04	23.68 −.01	22.03 .64	25.99 .61	29.09 .10	31.76 .00	46.97 .46	4.89 .21
June 8.4	42.26 .07	23.66 .03	21.33 .76	25.24 .87	28.98 .13	31.74 −.03	47.53 .64	4.60 .37
18.3	42.19 .09	23.61 .05	20.52 .85	24.26 1.07	28.83 .17	31.70 .05	48.26 .80	4.15 .51
28.3	42.10 −.11	23.55 −.07	19.63 −.93	23.10−1.25	28.64 −.19	31.64 −.07	49.13+ .93	3.58 −.64
July 8.3	41.98 .12	23.47 .09	18.66 .98	21.76 1.41	28.45 .20	31.56 .09	50.12 1.05	2.88 .74
18.3	41.85 .14	23.36 .10	17.67 1.00	20.29 1.54	28.23 .22	31.45 .11	51.23 1.13	2.10 .83
28.2	41.71 −.15	23.25 −.11	16.66 −.99	18.69−1.64	28.00 −.22	31.34 −.11	52.37+1.16	1.23 −.89

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	33 Bootis	47 Cephei, S. P.	γ Scorpii.	δ Bootis.	ρ Octantis.	β Cor. Bor.	γ Camelop., S. P.	δ^1 Apodis.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	45 9	349 0	114 52	56 18	174 7	60 32	341 1	168 26
	h m	h m	h m	h m	h m	h m	h m	h m
	14 34	14 52	14 58	15 11	15 19	15 23	15 39	16 4
	s	s	s	s	s	s	s	s
Mar 30.6	60.93 +.22	10.56– .48	1.29 +.23	21.10 +.22	30.35+1.77	34.82 +.23	21.30 –.40	54.72+1.13
Apr 9.6	61.11 .16	10.19 .27	1.50 .19	21.31 .18	31.98 1.49	35.04 .20	20.98 .24	55.78 .99
19.5	61.23 .10	10.03 .05	1.67 .16	21.46 .14	33.33 1.21	35.21 .16	20.81 –.11	56.70 .85
29.5	61.30 .06	10.10+ .17	1.83 .13	21.59 .11	34.40 .90	35.35 .12	20.75 +.01	57.49 .72
May 9.5	61.35 +.02	10.37 .39	1.94 .10	21.68 .07	35.13 .57	35.46 .08	20.82 .13	58.13 .57
19.5	61.34 –.03	10.88+ .60	2.03 +.07	21.73 +.03	35.54+ .24	35.53 +.05	21.01 +.26	58.62+ .40
29.4	61.28 .07	11.56 .78	2.08 .04	21.74 .00	35.61– .10	35.57 +.02	21.35 .39	58.92 .22
June 8.4	61.19 .10	12.43 .94	2.10 +.01	21.73 –.03	35.35 .43	35.56 –.02	21.78 .50	59.05+ .05
18.4	61.07 .13	13.43 1.08	2.09 –.02	21.66 .07	34.75 .74	35.53 .05	22.34 .60	59.01 .13
28.3	60.91 .16	14.58 1.19	2.05 .05	21.58 .10	33.87 1.04	35.45 .08	22.97 .68	58.78 .31
July 8.3	60.73 –.19	15.81+1.26	1.98 –.08	21.46 –.13	32.68–1.31	35.36 –.11	23.69 +.73	58.39– .46
18.3	60.52 .21	17.10 1.31	1.89 .10	21.32 .16	31.26 1.54	35.23 .14	24.47 .79	57.86 .60
28.3	60.31 .22	18.43 1.33	1.78 .13	21.15 .17	29.61 1.72	35.07 .16	25.27 .82	57.20 .72
Aug. 7.2	60.07 .23	19.77 1.33	1.64 .15	20.97 .18	27.83 1.80	34.91 .17	26.11 .84	56.42 .82
17.2	59.84 .23	21.09 1.30	1.50 .15	20.77 .19	26.01 1.83	34.72 .18	26.94 .83	55.55 .88
27.2	59.61 –.22	22.36+1.25	1.34 –.16	20.58 –.20	24.17–1.84	34.54 –.19	27.76 +.81	54.65– .91

Mean Solar Date.	φ Herculis.	σ Cor. Bor. (*mean.*)	γ Apodis.	η Urs. Min.	η Ophiuchi.	κ Herculis.	θ Ophiuchi.	δ Aræ.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	44 48	55 53	168 40	14 0	105 36	53 4	114 54	150 36
	h m	h m	h m	h m	h m	h m	h m	h m
	16 5	16 10	16 17	16 20	17 4	17 11	17 15	17 21
	s	s	s	s	s	s	s	s
Apr. 9.6	31.79 +.26	49.26 +.25	38.11+1.03	36.67 +.62	26.96 +.28	27.39 +.29	39.59 +.32	46.21 +.57
19.6	32.02 .21	49.48 .21	39.10 .93	37.21 .48	27.24 .26	27.66 .26	39.90 .29	46.73 .51
29.6	32.21 .17	49.67 .17	39.97 .78	37.63 .35	27.49 .24	27.92 .23	40.16 .26	47.22 .46
May 9.6	32.36 .13	49.82 .13	40.66 .62	37.90 .19	27.72 .22	28.13 .20	40.41 .24	47.66 .41
19.5	32.48 .08	49.94 .10	41.22 .46	38.01 +.03	27.92 .19	28.31 .16	40.64 .21	48.04 .36
29.5	32.52 +.03	50.01 +.06	41.59+ .29	37.97 –.12	28.09 +.16	28.45 +.12	40.84 +.18	48.37 +.29
June 8.5	32.54 –.01	50.04 +.02	41.80+ .11	37.78 .27	28.23 .12	28.55 .08	40.99 .14	48.62 .22
18.4	32.49 .06	50.05 –.02	41.80 - .08	37.44 .41	28.33 .08	28.60 +.04	41.12 .11	48.80 .15
28.4	32.41 .11	50.00 .06	41.63 .25	36.96 .54	28.39 .04	28.62 –.01	41.19 .07	48.91 +.08
July 8.4	32.28 .15	49.92 .10	41.29 .42	36.36 .66	28.41 +.01	28.58 .05	41.24 +.03	48.94 .00
18.4	32.10 –.18	49.81 –.13	40.79– .58	35.64 –.76	28.41 –.03	28.50 –.09	41.24 –.02	48.90 –.08
28.3	31.91 .21	49.65 .16	40.14 .71	34.84 .84	28.35 .07	28.38 .14	41.19 .06	48.77 .16
Aug 7.3	31.68 .24	49.48 .18	39.38 .82	33.96 .90	28.27 .10	28.21 .17	41.11 .10	48.59 .22
17.3	31.43 .26	49.28 .20	38.50 .90	33.04 .95	28.16 .13	28 02 .20	40.99 .13	48.33 .28
27.3	31.15 .27	49.07 .21	37.57 .94	32.07 .97	28.02 .15	27.81 .22	40.84 .15	48.03 .32
Sept 6.2	30.89 –.26	48.85 –.22	36.62– .94	31.10 –.96	27.86 –.16	27.57 –.23	40.68 –.17	47.68 –.34
16.2	30.62 .26	48.64 .22	35.70 .90	30.14 .92	27.69 .15	27.34 .24	40.50 .18	47.34 .35
26.2	30.36 .24	48.42 .23	34.83 .82	29.26 .86	27.53 .14	27.09 .23	40.32 .17	46.99 .34
Oct. 6.1	30.14 –.20	48.18 –.24	34.06– .74	28.43 –.78	27.39 –.14	26.87 –.22	40.16 –.15	46.66 - .32

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombr. 944, S. P.	ι Herculis.	θ Herculis.	o Herculis.	λ Sagittarii.	χ Draconis.	ζ Pavonis.	γ Lyræ.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	355 9	43 56	52 44	61 15	115 29	17 19	161 31	57 27
	h m	h m	h m	h m	h m	h m	h m	h m
	17 28	17 36	17 52	18 3	18 21	18 22	18 30	18 55
	s	s	s	s	s	s	s	s
May 19.6	34.80− .36	34.63 +.19	43.77 +.20	31.73 +.21	36.38 +.26	58.83 +.42	60.25 +.66	5.52 +.26
29.6	34.65+ .07	34.79 .15	43.95 .16	31.92 .18	36.63 .24	59.19 .30	60.87 .58	5.76 .23
June 8.5	34.95 .54	34.92 .10	44.09 .12	32.08 .14	36.86 .21	59.43 .18	61.41 .48	5.98 .19
18.5	35.73 .99	34.98 +.04	44.19 .08	32.20 .10	37.05 .17	59.55 +.05	61.83 .37	6.15 .14
28.5	36.93 1.41	35.00 −.01	44.24 +.03	32.27 .06	37.19 .13	59.52 −.09	62.15 .25	6.27 .10
July 8.5	38.55+1.80	34.96 −.06	44.25 −.02	32.31 +.02	37.30 +.09	59.38 −.20	62.33 +.12	6.35 +.06
18.4	40.53 2.13	34.87 .12	44.20 .06	32.31 −.03	37.35 +.04	59.12 .32	62.39 .00	6.40 +.01
28.4	42.80 2.43	34.73 .17	44.12 .11	32.24 .07	37.36 −.01	58.75 .43	62.33 −.12	6.38 −.04
Aug. 7.4	45.39 2.69	34.54 .20	43.99 .15	32.15 .12	37.32 .05	58.25 .53	62.14 .24	6.32 .09
17.3	48.18 2.86	34.32 .23	43.81 .18	32.02 .15	37.25 .09	57.69 .62	61.85 .35	6.21 .13
27.3	51.11+3.00	34.07 −.26	43.62 −.21	31.84 −.17	37.14 −.13	57.02 −.69	61.44 −.45	6.07 −.17
Sept. 6.3	54.18 3.10	33.78 .28	43.39 .23	31.66 .19	36.98 .16	56.31 .75	60.96 .52	5.88 .20
16.3	57.31 3.12	33.49 .29	43.15 .24	31.45 .21	36.82 .17	55.52 .79	60.41 .56	5.68 .21
26.2	60.42 3.08	33.19 .29	42.90 .25	31.24 .21	36.64 .18	54.73 .79	59.84 .58	5.47 .22
Oct. 6.2	63.46 3.00	32.91 .27	42.66 .24	31.02 .21	36.46 .17	53.93 .80	59.25 .58	5.24 .22
16.2	66.41+2.84	32.65 −.24	42.42 −.23	30.82 −.20	36.29 −.16	53.14 −.79	58.68 −.55	5.02 −.21

Mean Solar Date.	ι Lyræ.	25 Camelop. S. P.	θ Lyræ.	β Cygni.	β Sagittæ.	δ Cygni.	Groombr. 1374. S. P.	ε Pavonis
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	54 4	352 37	52 3	62 16	72 46	45 7	344 12	163 11
	h m	h m	h m	h m	h m	h m	h m	h m
	19 3	19 9	19 12	19 26	19 36	19 41	19 47	19 48
	s	s	s	s	s	s	s	s
May 29.6	37.96 +.25	12.33− .61	47.85 +.26	34.08 +.26	25.19 +.25	45.73 +.30	46.17− .35	41.37 +.79
June 8.6	38.19 .21	11.87 .32	48.09 .21	34.32 .22	25.44 .23	46.00 .25	45.88 .22	42.11 .70
18.6	38.38 .16	11.69− .03	48.28 .16	34.54 .18	25.66 .20	46.24 .20	45.72− .10	42.76 .60
28.5	38.50 .11	11.81+ .26	48.42 .12	34.70 .14	25.83 .16	46.42 .15	45.68+ .03	43.32 .49
July 8.5	38.59 .07	12.20 .53	48.52 .08	34.81 .10	25.97 .12	46.54 .10	45.79 .17	43.74 .36
18.5	38.62 +.02	12.87+ .81	48.56 +.03	34.89 +.06	26.07 +.08	46.62 +.05	46.02+ .29	44.05 +.23
28.4	38.62 −.03	13.82 1.06	48.56 −.02	34.91 +.01	26.11 +.04	46.62 −.01	46.36 .41	44.20 +.08
Aug. 7.4	38.55 .08	14.98 1.28	48.50 .08	34.90 −.04	26.12 −.01	46.58 .07	46.84 .52	44.20 −.06
17.4	38.45 .13	16.37 1.49	48.39 .13	34.83 .08	26.08 .06	46.48 .12	47.41 .62	44.09 .19
27.4	38.30 .16	17.95 1.65	48.24 .17	34.72 .12	25.99 .10	46.34 .17	48.08 .72	43.83 .32
Sept. 6.3	38.11 −.19	19.72+1.83	48.05 −.20	34.57 −.16	25.89 −.13	46.14 −.21	48.86+ .81	43.45 −.44
16.3	37.91 .22	21.60 1.94	47.84 .23	34.40 .18	25.74 .15	45.92 .24	49.71 .88	42.95 .53
26.3	37.68 .23	23.59 2.02	47.60 .24	34.21 .19	25.58 .16	45.66 .26	50.61 .94	42.39 .60
Oct. 6.3	37.44 .23	25.64 2.07	47.36 .25	34.00 .20	25.41 .17	45.39 .27	51.58 .98	41.76 .63
16.2	37.21 .23	27.74 2.06	47.12 .24	33.80 .20	25.23 .18	45.12 .28	52.58 .99	41.12 .64
26.2	36.98 −.21	29.77+2.03	46.89 −.23	33.61 −.19	25.06 −.16	44.85 −.27	53.57+1.00	40.48 −.63
Nov. 5.2	36.78 −.15	31.80+2.00	46.68 .21	33.43 −.18	24.91 −.14	44.58 −.26	54.58+1.00	39.86 −.60

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Sagittæ.	ι Sagittarii.	θ Aquilæ.	31 Cygni	α Delphini.	β Pavonis.	ψ Capricor.	ε Cygni
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	70 47	118 0	91 8	43 34	74 27	156 35	115 39	56 25
	h m	h m	h m	h m	h m	h m	h m	h m
	19 54	19 56	20 5	20 10	20 34	20 35	20 39	20 42
	s	s	s	s	s	s	s	s
June 18.6	10.83 +.23	19.68 +.27	59.46 +.22	24.02 +.24	51.25 +.24	42.12 +.54	59.90 +.28	2.77 +.27
28.6	11.02 .17	19.93 .23	59.66 .20	24.23 .19	51.48 .21	42.62 .46	60.16 .25	3.02 .23
July 8.5	11.17 .13	20.13 .18	59.84 .16	24.40 .14	51.67 .17	43.04 .38	60.40 .22	3.22 .18
18.5	11.29 .09	20.28 .13	59.98 .12	24.51 .08	51.82 .12	43.39 .29	60.60 .17	3.37 .13
28.5	11.35 +.05	20.39 .08	60.08 .07	24.55 +.02	51.93 .08	43.63 .19	60.74 .12	3.48 .08
Aug. 7.5	11.38 .00	20.44 +.03	60.12 +.03	24.55 −.03	51.99 +.05	43.76 +.08	60.84 +.07	3.52 +.03
17.4	11.35 −.04	20.44 −.02	60.13 −.01	24.48 .09	52.02 +.01	43.78 −.02	60.87 +.03	3.53 −.01
27.4	11.28 .08	20.38 .06	60.08 .05	24.37 .15	51.98 −.04	43.71 .12	60.87 −.01	3.49 .06
Sept. 6.4	11.18 .12	20.30 .10	60.01 .09	24.20 .19	51.92 .08	43.53 .23	60.82 .05	3.41 .11
16.4	11.04 .15	20.18 .13	59.91 .12	23.99 .23	51.83 .12	43.25 .31	60.74 .10	3.28 .14
26.3	10.88 −.17	20.02 −.15	59.77 −.14	23.74 −.25	51.70 −.15	42.91 −.37	60.61 −.13	3.12 −.17
Oct. 6.3	10.71 .18	19.85 .17	59.62 .15	23.48 .27	51.54 .16	42.51 .42	60.46 .15	2.94 .19
16.3	10.53 .18	19.67 .18	59.47 .15	23.20 .28	51.38 .16	42.08 .44	60.30 .16	2.74 .20
26.2	10.35 .17	19.50 .16	59.32 .14	22.93 .27	51.22 .15	41.63 .45	60.15 .16	2.55 .20
Nov. 5.2	10.19 .14	19.34 .14	59.18 .13	22.66 .26	51.07 .14	41.18 .44	59.98 .15	2.35 .20
15.2	10.05 −.11	19.21 −.12	59.05 −.11	22.41 −.24	50.93 −.13	40.75 −.40	59.84 −.13	2.16 −.18
25.2	9.95 −.08	19.10 −.11	58.96 −.08	22.18 −.21	50.80 −.12	40.38 −.33	59.71 −.10	1.98 −.16

Mean Solar Date.	τ Cygni.	ζ Capricor.	74 Cygni.	λ¹ Octantis.	ζ Chamæleontis, S P.	π² Cygni.	16 Pegasi.	π Pegasi.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	52 24	112 52	50 3	173 12	189 32	41 10	64 34	57 20
	h m	h m	h m	h m	h m	h m	h m	h m
	21 10	21 20	21 32	21 35	21 36	21 42	21 48	22 5
	s	s	s	s	s	s	s	s
July 8.6	41.29 +.21	47.67 +.25	49.63 +.25	16.15+1.40	47.08− .80	59.78 +.25	22.69 +.25	24.88 +.27
18.6	41.49 .16	47.90 .21	49.85 .19	17 40 1.11	46.36 .64	60.03 .22	22.92 .20	25.13 .22
28.5	41.62 .11	48.08 .16	50.01 .14	18.37 .87	45.81 .43	60.21 .15	23.09 .15	25.33 .17
Aug. 7.5	41.71 .06	48.21 .11	50.14 .09	19.04 .56	45.50− .21	60.34 .09	23.22 .11	25.47 .12
17.5	41.74 +.01	48.30 .06	50.19 +.04	19.38+ .17	45.38 .00	60.40 +.04	23.32 .07	25.58 .08
27.5	41.73 −.04	48.33 +.02	50.20 −.01	19.38− .17	45.49+ .24	60.41 −.01	23.36 +.02	25.64 +.04
Sept. 6.4	41.66 .08	48.33 −.02	50.15 .06	19.04 .51	45.87 .47	60.37 .06	23.36 −.02	25.65 .00
16.4	41.55 .13	48.27 .06	50.07 .11	18.36 .83	46.43 .67	60.28 .12	23.31 .06	25.62 −.04
26.4	41.40 .17	48.18 .10	49.95 .15	17.38 1.11	47.21 .88	60.12 .17	23.23 .09	25.54 .09
Oct. 6.4	41.23 .18	48.07 .12	49.78 .17	16.14 1.35	48.20 1.07	59.92 .20	23.12 .12	25.44 .13
16.3	41.04 −.19	47.94 −.14	49.59 −.19	14.69 −1.53	49.36+1.22	59.71 −.22	23.00 −.14	25.31 −.15
26.3	40.83 .20	47.78 .15	49.39 .20	13.09 1.65	50.64 1.33	59.48 .24	22.85 .15	25.16 .16
Nov. 5.3	40.63 .21	47.62 .14	49.19 .21	11.39 1.71	51.99 1.37	59.23 .26	22.70 .16	25.00 .17
15.2	40.43 .19	47.49 .13	48.98 .20	9.67 1.70	53.38 1.38	58.97 .26	22.54 .15	24.82 .18
25.2	40.24 .18	47.36 .12	48.79 .20	7.99 1.62	54.76 1.34	58.72 .25	22 40 .13	24.66 .17
Dec. 5.2	40.07 −.17	47.25 −.11	48.60 −.19	6.44−1.45	56.06+1.27	58.48 −.25	22.26 −.10	24.50 −.14

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	υ Octantis.	γ Aquarii.	σ Aquarii.	α Lacertæ.	10 Lacertæ.	β Octantis.	λ Pegasi.	Groombr. 1706, S. P.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	176 30	91 55	101 13	40 15	51 29	171 56	66 59	348 20
	h m	h m	h m	h m	h m	h m	h m	h m
	22 11	22 16	22 25	22 27	22 34	22 35	22 41	22 51
	s	s	s	s	s	s	s	s
July 8.6	75.04+2.95	20.22 +.26	11.84 +.27	2.93 +.33	38.30 +.30	38.95+1.36	34.01 +.29	40.22− .63
18.6	77.75 2.46	20.47 .23	12.10 .24	3.23 .28	38.57 .26	40.26 1.24	34.28 .25	39.64 .52
28.6	79.97 1.95	20.68 .19	12.33 .20	3.47 .22	38.81 .22	41.40 1.03	34.52 .21	39.18 .39
Aug. 7.6	81.65 1.38	20.85 .15	12.51 .16	3.68 .16	39.01 .17	42.31 .78	34.70 .16	38.87 .25
17.5	82.72 .76	20.97 .11	12.64 .12	3.82 .10	39.15 .12	42.97 .52	34.85 .12	38.67− .12
27.5	83.17+ .11	21.05 +.06	12.74 +.08	3.89 +.05	39.25 +.07	43.35+ .24	34.96 +.09	38.62+ .02
Sept. 6.5	82.94− .56	21.09 +.02	12.79 +.04	3.92 .00	39.28 +.02	43.45− .05	35.02 +.05	38.72 .19
16.4	82.05 1.19	21.09 −.02	12.80 .00	3.88 −.06	39.28 −.02	43.25 .35	35.04 .00	39.01 .36
26.4	80.56 1.79	21.06 .05	12.78 −.04	3.80 .11	39.23 .06	42.76 .61	35.02 −.04	39.45 .50
Oct. 6.4	78.47 2.35	20.99 .07	12.72 .07	3.68 .15	39.15 .10	42.03 .85	34.96 .07	40.01 .64
16.4	75.87−2.78	20.91 −.09	12.63 −.09	3.50 −.18	39.02 −.13	41.06−1.07	34.87 −.09	40.73+ .80
26.3	72.90 3.13	20.80 .11	12.52 .11	3.31 .21	38.88 .16	39.90 1.24	34.77 .11	41.61 .93
Nov. 5.3	69.61 3.37	20.68 .12	12.41 .12	3.09 .23	38.72 .17	38.58 1.37	34.65 .12	42.58 1.03
15.3	66.17 3.46	20.56 .11	12.29 .12	2.85 .24	38.54 .18	37.16 1.44	34.53 .13	43.67 1.13
25.3	62.70 3.43	20.45 .11	12.17 .11	2.61 .24	38.36 .18	35.70 1.44	34.39 .14	44.86 1.21
Dec. 5.2	59.32−3.26	20.33 −.10	12.05 −.10	2.37 −.23	38.18 −.18	34.27−1.40	34.26 −.13	46.08+1.23
15.2	56.18−3.00	20.24 −.09	11.95 −.09	2.14 −.22	38.00 −.17	32.90−1.30	34.13 −.12	47.32+1.26

Mean Solar Date.	ο Androm.	φ Aquarii.	τ Pegasi.	λ Androm.	ι¹ Aquarii.	δ Sculptoris.	γ¹ Octantis.	33 Piscium.
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
	48 14	96 37	66 50	44 6	108 51	118 42	172 36	96 17
	h m	h m	h m	h m	h m	h m	h m	h m
	22 57	23 8	23 15	23 32	23 38	23 43	23 46	24 0
	s	s	s	s	s	s	s	s
July 28.6	11.20 +.25	59.70 +.24	32.49 +.23	31.46 +.30	52.03 +.28	34.26 +.29	12.48+1.40	3.98 +.27
Aug. 7.6	11.43 .20	59.92 .20	32.71 .20	31.73 .25	52.28 .23	34.52 .25	13.79 1.22	4.23 .24
17.6	11.60 .15	60.09 .16	32.90 .16	31.96 .20	52.48 .19	34.75 .20	14.91 .99	4.46 .20
27.5	11.73 .10	60.23 .12	33.03 .12	32.13 .15	52.65 .15	34.92 .16	15.77 .71	4.64 .16
Sept. 6.5	11.80 +.05	60.32 .08	33.13 .08	32.26 .10	52.78 .11	35.07 .12	16.33 .40	4.77 .12
16.5	11.82 .00	60.37 +.04	33.18 +.04	32.33 +.05	52.88 +.07	35.17 +.07	16.58 +.11	4.88 +.09
26.5	11.81 −.04	60.39 .00	33.20 .00	32.36 +.01	52.92 +.03	35.21 +.03	16.56 −.20	4.94 .05
Oct. 6.4	11.74 .08	60.38 −.03	33.18 −.04	32.35 −.03	52.92 −.01	35.22 −.01	16.18 .52	4.97 +.01
16.4	11.64 .12	60.34 .06	33.13 .07	32.28 .07	52.90 .04	35.19 .05	15.53 .80	4.97 −.02
26.4	11.52 .15	60.25 .08	33.05 .09	32.19 .11	52.83 .07	35.11 .08	14.58 1.07	4.94 .04
Nov. 5.3	11.36 −.17	60.16 −.09	32.96 −.10	32.06 −.15	52.75 −.09	35.02 −.10	13.40−1.29	4.88 −.06
15.3	11.19 .17	60.06 .10	32.85 .11	31.90 .17	52.65 .10	34.91 .11	12.01 1.45	4.80 .08
25.3	11.01 .18	59.96 .11	32.73 .12	31.72 .18	52.54 .11	34.79 .12	10.50 1.56	4.72 .09
Dec. 5.3	10.82 .18	59.85 .10	32.61 .12	31.53 .19	52.43 .12	34.65 .13	8.89 1.63	4.63 .10
15.2	10.64 .18	59.74 .09	32.48 .12	31.34 .19	52.31 .12	34.52 .13	7.25 1.62	4.53 .10
25.2	10.47 −.18	59.65 −.08	32.36 −.11	31.15 −.20	52.20 −.11	34.39 −.13	5.64−1.57	4.42 −.10
35.2	10.28 −.18	59.57 −.06	32.25 −.10	30.95 −.19	52.09 −.10	34.26 −.12	4.12−1.45	4.32 −.09

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h. m s
an. 0	18 42 46.65	47.25	−23 5 25.5	24.9	11.050	+11.29	+ 3 17.20	16 18.41	1 11.10	18 39 29.50
1	18 47 11.63	12.32	23 0 40.8	40.1	11.037	12.43	3 45.64	16 18.42	1 11.06	18 43 26.06
2	18 51 36.29	37.06	22 55 28.6	27.6	11.022	13.57	4 13.75	16 18.42	1 11.01	18 47 22.62
3	18 56 0.61	1.47	22 49 49.0	47.8	11.006	14.71	4 41.52	16 18.41	1 10.96	18 51 19.18
4	19 0 24.56	25.49	22 43 42.3	40.8	10.989	15.84	5 8.91	16 18.40	1 10.91	18 55 15.74
5	19 4 48.10	49.13	−22 37 8.3	6.8	10.972	+16.97	+ 5 35.91	16 18.37	1 10.85	18 59 12.30
6	19 9 11.23	12.33	22 30 7.7	5.8	10.954	18.09	6 2.49	16 18.34	1 10.79	19 3 8.86
7	19 13 33.90	35.09	22 22 40.3	38.1	10.935	19.20	6 28.60	16 18.31	1 10.73	19 7 5.41
8	19 17 56.10	57.35	22 14 46.3	44.0	10.915	20.29	6 54.24	16 18.27	1 10.66	19 11 1.97
9	19 22 17.80	19.12	22 6 26.2	23.6	10.893	21.38	7 19.39	16 18.23	1 10.58	19 14 58.53
10	19 26 38.96	40.35	−21 57 40.1	37.3	10.871	+22.46	+ 7 44.00	16 18.18	1 10.50	19 18 55.09
11	19 30 59.56	61.03	21 48 28.2	25.1	10.847	23.53	8 8.05	16 18.13	1 10.42	19 22 51.65
12	19 35 19.59	21.13	21 38 50.9	47.4	10.821	24.58	8 31.51	16 18.08	1 10.34	19 26 48.21
13	19 39 39.01	40.60	21 28 48.2	44.4	10.795	25.63	8 54.38	16 18.02	1 10.26	19 30 44.77
14	19 43 57.78	59.44	21 18 20.7	16.6	10.768	26.66	9 16.60	16 17.96	1 10.17	19 34 41.32
15	19 48 15.92	17.64	−21 7 28.6	24.0	10.741	+27.68	+ 9 38.18	16 17.89	1 10.08	19 38 37.88
16	19 52 33.36	35.15	20 56 12.1	7.2	10.713	28.68	9 59.06	16 17.82	1 9.99	19 42 34.44
17	19 56 50.11	51.94	20 44 31.8	26.6	10.683	29.67	10 19.25	16 17.74	1 9.89	19 46 31.00
18	20 1 6.14	8.03	20 32 27.7	22.2	10.652	30.65	10 38.71	16 17.66	1 9.79	19 50 27.56
19	20 5 21.42	23.36	20 19 60.4	54.5	10.621	31.61	10 57.43	16 17.58	1 9.69	19 54 24.11
20	20 9 35.94	37.94	−20 7 10.3	4.1	10.589	+32.56	+11 15.40	16 17.50	1 9.59	19 58 20.67
21	20 13 49.69	51.72	19 53 57.4	51.0	10.557	33.50	11 32.60	16 17.41	1 9.49	20 2 17.23
22	20 18 2.65	4.73	19 40 22.6	15.9	10.524	34.41	11 49.00	16 17.32	1 9.38	20 6 13.79
23	20 22 14.82	16.94	19 26 26.0	18.9	10.490	35.31	12 4.61	16 17.22	1 9.28	20 10 10.34
24	20 26 26.19	28.34	19 12 8.0	0.5	10.457	36.19	12 19.42	16 17.11	1 9.17	20 14 6.90
25	20 30 36.75	38.92	−18 57 28.8	21.0	10.423	+37.06	+12 33.40	16 17.00	1 9.06	20 18 3.46
26	20 34 46.48	48.70	18 42 29.0	20.9	10.389	37.91	12 46.58	16 16.88	1 8.95	20 22 0.02
27	20 38 55.40	57.64	18 27 9.0	0.5	10.355	38.75	12 58.93	16 16.76	1 8.84	20 25 56.57
28	20 43 3.49	5.76	18 11 29.0	20.2	10.320	39.57	13 10.47	16 16.64	1 8.72	20 29 53.13
29	20 47 10.76	13.06	17 55 29.4	20.4	10.286	40.38	13 21.17	16 16.51	1 8.61	20 33 49.69
30	20 51 17.22	19.53	−17 39 10.7	1.3	10.252	+41.17	+13 31.06	16 16.37	1 8.49	20 37 46.24
31	20 55 22.86	25.19	17 22 33.2	23.5	10.218	41.94	13 40.14	16 16.23	1 8.38	20 41 42.80
eb 1	20 59 27.69	30.03	17 5 37.1	27.3	10.184	42.71	13 48.40	16 16.08	1 8.26	20 45 39.36
2	21 3 31.70	34.05	16 48 23.2	12.9	10.151	43.45	13 55.84	16 15.93	1 8.15	20 49 35.91
3	21 7 34.90	37.26	16 30 51.5	41.1	10.117	44.17	14 2.49	16 15.77	1 8.04	20 53 32.47
4	21 11 37.30	39.67	−16 12 62.5	51.9	10.084	+44.88	+14 8.33	16 15.60	1 7.92	20 57 29.03
5	21 15 38.91	41.29	15 54 56.7	45.8	10.051	45.59	14 13.37	16 15.43	1 7.81	21 1 25.58
6	21 19 39.72	42.11	15 36 34.4	23.3	10.018	46.26	14 17.62	16 15.26	1 7.69	21 5 22.14
7	21 23 39.76	42.15	15 17 56.0	44.7	9.985	46.93	14 21.09	16 15.08	1 7.58	21 9 18.69
8	21 27 39.00	41.39	14 58 62.0	50.5	9.952	47.56	14 23.77	16 14.90	1 7.47	21 13 15.25
9	21 31 37.47	39.86	−14 39 52.7	41.0	9.920	+48.19	+14 25.67	16 14.72	1 7.35	21 17 11.81
10	21 35 35.16	37.54	14 20 28.6	16.7	9.888	48.80	14 26.81	16 14.53	1 7.24	21 21 8.36
11	21 39 32.09	34.46	14 0 50.1	38.2	9.856	49.39	14 27.17	16 14.34	1 7.13	21 25 4.92
12	21 43 28.25	30.61	13 40 57.7	45.6	9.824	49.96	14 26.76	16 14.15	1 7.02	21 29 1.47
13	21 47 23.65	26.01	13 20 51.7	39.6	9.793	50.52	14 25.61	16 13.96	1 6.92	21 32 58.03
14	21 51 18.32	20.65	−13 0 32.7	20.4	9.762	+51.05	+14 23.70	16 13.76	1 6.81	21 36 54.59
15	21 55 12.24	14.56	−12 39 61.2	48.8	9.731	+51.57	+14 21.06	16 13.56	1 6.71	21 40 51.14

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.19$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Feb. 15	21 55 12.24	14.56	−12 39 61.2	48.8	9.731	+51.57	+14 21.06	16 13.56	1 6.71	21 40 51.14
16	21 59 5.41	7.72	12 19 17.4	4.9	9.701	52.06	14 17.67	16 13.36	1 6.60	21 44 47.69
17	22 2 57.86	60.16	11 58 21.9	9.4	9.671	52.55	14 13.57	16 13.16	1 6.50	21 48 44.25
18	22 6 49.60	51.88	11 37 15.2	2.6	9.641	53.01	14 8.76	16 12.95	1 6.40	21 52 40.81
19	22 10 40.64	42.89	11 15 57.4	44.9	9.612	53.45	14 3.23	16 12.74	1 6.30	21 56 37.36
20	22 14 30.99	33.21	−10 54 29.5	16.9	9.584	+53.88	+13 57.00	16 12.53	1 6.21	22 0 33.91
21	22 18 20.64	22.85	10 32 51.4	38.9	9.556	54.28	13 50.11	16 12.32	1 6.11	22 4 30.47
22	22 22 9.65	11.82	10 10 63.8	51.2	9.528	54.67	13 42.55	16 12.10	1 6.02	22 8 27.03
23	22 25 58.01	60.15	9 48 66.9	54.4	9.502	55.05	13 34.35	16 11.88	1 5.93	22 12 23.58
24	22 29 45.74	47.87	9 26 61.3	48.8	9.477	55.40	13 25.52	16 11.65	1 5.84	22 16 20.13
25	22 33 32.86	34.94	− 9 4 47.2	34.8	9.452	+55.75	+13 16.08	16 11.43	1 5.76	22 20 16.69
26	22 37 19.40	21.45	8 42 25.2	12.9	9.427	56.08	13 6.06	16 11.20	1 5.68	22 24 13.24
27	22 41 5.36	7.39	8 19 55.5	43.2	9.404	56.38	12 55.46	16 10.96	1 5.60	22 28 9.80
28	22 44 50.77	52.77	7 57 18.5	6.4	9.382	56.68	12 44.33	16 10.72	1 5.52	22 32 6.35
29	22 48 35.66	37.61	7 34 34.5	22.6	9.361	56.97	12 32.65	16 10.48	1 5.45	22 36 2.91
Mar. 1	22 52 20.05	21.97	− 7 11 44.1	32.3	9.340	+57.23	+12 20.47	16 10.24	1 5.38	22 39 59.46
2	22 56 3.94	5.82	6 48 47.4	35.8	9.320	57.48	12 7.82	16 9.99	1 5.31	22 43 56.01
3	22 59 47.39	49.24	6 25 45.1	33.6	9.301	57.72	11 54.70	16 9.73	1 5.24	22 47 52.57
4	23 3 30.38	32.20	6 2 37.2	25.9	9.283	57.93	11 41.15	16 9.47	1 5.17	22 51 49.12
5	23 7 12.97	14.74	5 39 24.3	13.1	9.266	58.13	11 27.18	16 9.21	1 5.11	22 55 45.67
6	23 10 55.15	56.88	− 5 15 66.6	55.6	9.250	+58.32	+11 12.81	16 8.95	1 5.05	22 59 42.23
7	23 14 36.96	38.65	4 52 44.6	33.9	9.235	58.49	10 58.07	16 8.68	1 4.99	23 3 38.78
8	23 18 18.41	20.06	4 29 18.7	8.2	9.220	58.65	10 42.96	16 8.42	1 4.94	23 7 35.34
9	23 21 59.52	61.14	4 5 49.3	39.0	9.206	58.79	10 27.51	16 8.15	1 4.89	23 11 31.89
10	23 25 40.30	41.86	3 42 16.6	6.5	9.193	58.91	10 11.74	16 7.89	1 4.84	23 15 28.44
11	23 29 20.79	22.30	− 3 18 41.3	31.4	9.181	+59.02	+ 9 55.67	16 7.62	1 4.79	23 19 25.00
12	23 33 0.98	2.46	2 54 63.6	54.1	9.170	59.11	9 39.32	16 7.35	1 4.75	23 23 21.55
13	23 36 40.91	42.34	2 31 23.9	14.6	9.159	59.18	9 22.69	16 7.08	1 4.71	23 27 18.11
14	23 40 20.58	21.97	2 7 42.8	33.7	9.148	59.24	9 5.81	16 6.81	1 4.67	23 31 14.66
15	23 44 0.02	1.36	1 43 60.4	51.7	9.139	59.28	8 48.70	16 6.54	1 4.64	23 35 11.21
16	23 47 39.24	40.53	− 1 20 17.3	8.8	9.130	+59.30	+ 8 31.37	16 6.28	1 4.61	23 39 7.77
17	23 51 18.25	19.50	0 56 33.8	25.7	9.122	59.31	8 13.83	16 6.01	1 4.59	23 43 4.32
18	23 54 57.08	58.30	0 32 50.6	42.6	9.115	59.30	7 56.11	16 5.74	1 4.57	23 47 0.87
19	23 58 35.76	36.91	− 0 8 67.6	59.9	9.108	59.27	7 38.23	16 5.47	1 4.55	23 50 57.43
20	0 2 14.27	15.39	+ 0 14 34.5	41.8	9.102	59.23	7 20.20	16 5.20	1 4.53	23 54 53.98
21	0 5 52.66	53.73	+ 0 38 15.5	22.4	9.097	+59.18	+ 7 2.05	16 4.94	1 4.51	23 58 50.53
22	0 9 30.95	31.97	1 1 54.9	61.5	9.093	59.10	6 43.79	16 4.67	1 4.50	0 2 47.09
23	0 13 9.15	10.13	1 25 32.5	38.8	9.090	59.01	6 25.43	16 4.40	1 4.49	0 6 43.64
24	0 16 47.27	48.21	1 49 7.8	13.9	9.088	58.91	6 7.01	16 4.13	1 4.48	0 10 40.19
25	0 20 25.37	26.24	2 12 40.5	46.3	9.087	58.80	5 48.53	16 3.85	1 4.48	0 14 36.75
26	0 24 3.42	4.26	+ 2 36 10.4	15.8	9.086	+58.68	+ 5 30.05	16 3.58	1 4.48	0 18 33.30
27	0 27 41.48	42.27	2 59 37.0	42.1	9.086	58.54	5 11.56	16 3.31	1 4.48	0 22 29.85
28	0 31 19.58	20.31	3 23 0.1	4.9	9.088	58.38	4 53.10	16 3.03	1 4.49	0 26 26.41
29	0 34 57.71	58.40	3 46 19.3	23.8	9.091	58.21	4 34.70	16 2.75	1 4.50	0 30 22.96
30	0 38 35.92	36.57	4 9 34.4	38.5	9.094	58.03	4 16.35	16 2.47	1 4.51	0 34 19.51
31	0 42 14.22	14.82	+ 4 32 44.9	48.8	9.098	+57.84	+ 3 58.11	16 2.19	1 4.52	0 38 16.07
32	0 45 52.64	53.19	+ 4 55 50.7	54.1	9.103	+57.63	+ 3 39.97	16 1.91	1 4.54	0 42 12.62

Note.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

ate.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
r. 1	0 45 52.64	53.19	+ 4 55 50.7	54.1	9.103	+57.63	+3 39.97	16 1.91	1 4.54	0 42 12.62
2	0 49 31.19	31.70	5 18 51.3	54.4	9.109	57.41	3 21.97	16 1.63	1 4.56	0 46 9.18
3	0 53 9.91	10.37	5 41 46.3	49.2	9.117	57.18	3 4.14	16 1.35	1 4.58	0 50 5.73
4	0 56 48.80	49.22	6 4 35.6	38.3	9.125	56.92	2 46.48	16 1.07	1 4.61	0 54 2.28
5	1 0 27.89	28.27	6 27 18.8	21.1	9.134	56.66	2 29.02	16 0.78	1 4.64	0 57 58.84
6	1 4 7.21	7.54	+ 6 49 55.4	57.5	9.143	+56.38	+2 11.79	16 0.50	1 4.67	1 1 55.39
7	1 7 46.75	47.04	7 12 25.2	26.9	9.153	56.09	1 54.78	16 0.22	1 4.70	1 5 51.95
8	1 11 26.55	26.80	7 34 47.7	49.3	9.164	55.78	1 38.04	15 59.94	1 4.74	1 9 48.50
9	1 15 6.62	6.83	7 57 2.6	4.0	9.176	55.46	1 21.56	15 59.66	1 4.78	1 13 45.05
10	1 18 46.98	47.14	8 19 9.7	10.7	9.188	55.12	1 5.36	15 59.39	1 4.82	1 17 41.61
11	1 22 27.63	27.75	+ 8 41 8.5	9.2	9.200	+54.76	+0 49.46	15 59.11	1 4.86	1 21 38.16
12	1 26 8.59	8.68	9 2 58.6	59.1	9.213	54.40	0 33.87	15 58.84	1 4.91	1 25 34.72
13	1 29 49.88	49.92	9 24 39.6	39.8	9.227	54.01	0 18.60	15 58.57	1 4.95	1 29 31.27
14	1 33 31.49	31.50	9 46 11.2	11.3	9.241	53.61	+0 3.68	15 58.31	1 5.00	1 33 27.83
15	1 37 13.46	13.43	10 7 33.1	32.9	9.256	53.20	−0 10.91	15 58.04	1 5.06	1 37 24.38
16	1 40 55.79	55.72	+10 28 44.8	44.5	9.271	+52.77	−0 25.14	15 57.78	1 5.11	1 41 20.93
17	1 44 38.48	38.38	10 49 46.1	45.6	9.287	52.32	0 39.00	15 57.53	1 5.17	1 45 17.49
18	1 48 21.56	21.42	11 10 36.6	35.8	9.303	51.87	0 52.48	15 57.27	1 5.23	1 49 14.04
19	1 52 5.02	4.86	11 31 16.0	15.0	9.320	51.40	1 5.56	15 57.02	1 5.29	1 53 10.60
20	1 55 48.90	48.71	11 51 43.8	42.7	9.337	50.92	1 18.24	15 56.77	1 5.35	1 57 7.15
21	1 59 33.20	32.97	+12 11 59.9	58.6	9.355	+50.42	−1 30.50	15 56.52	1 5.42	2 1 3.71
22	2 3 17.93	17.66	12 32 3.9	2.4	9.373	49.91	1 42.33	15 56.27	1 5.48	2 5 0.26
23	2 7 3.10	2.80	12 51 55.5	53.8	9.392	49.39	1 53.70	15 56.02	1 5.55	2 8 56.82
24	2 10 48.73	48.41	13 11 34.3	32.6	9.411	48.85	2 4.62	15 55.77	1 5.62	2 12 53.37
25	2 14 34.84	34.49	13 30 60.1	58.3	9.431	48.30	2 15.08	15 55.52	1 5.69	2 16 49.93
26	2 18 21.44	21.05	+13 50 12.6	10.7	9.451	+47.74	−2 25.03	15 55.28	1 5.76	2 20 46.48
27	2 22 8.52	8.12	14 9 11.5	9.5	9.473	47.16	2 34.49	15 55.03	1 5.84	2 24 43.04
28	2 25 56.14	55.70	14 27 56.5	54.4	9.495	46.57	2 43.44	15 54.79	1 5.92	2 28 39.59
29	2 29 44.26	43.81	14 46 27.2	25.0	9.517	45.98	2 51.88	15 54.55	1 5.99	2 32 36.15
30	2 33 32.92	32.45	15 4 43.5	41.2	9.539	45.37	2 59.76	15 54.31	1 6.07	2 36 32.71
ay 1	2 37 22.14	21.64	+15 22 44.9	42.6	9.562	+44.74	−3 7.11	15 54.07	1 6.15	2 40 29.26
2	2 41 11.91	11.40	15 40 31.2	28.8	9.585	44.10	3 13.88	15 53.83	1 6.23	2 44 25.82
3	2 45 2.26	1.73	15 57 62.0	59.6	9.609	43.46	3 20.10	15 53.59	1 6.31	2 48 22.37
4	2 48 53.17	52.62	16 15 17.2	14.7	9.633	42.79	3 25.75	15 53.36	1 6.39	2 52 18.93
5	2 52 44.65	44.09	16 32 16.2	13.7	9.657	42.11	3 30.81	15 53.12	1 6.47	2 56 15.49
6	2 56 36.74	36.16	+16 48 58.8	56.4	9.681	+41.43	−3 35.29	15 52.89	1 6.55	3 0 12.04
7	3 0 29.41	28.82	17 5 24.8	22.3	9.706	40.73	3 39.19	15 52.67	1 6.63	3 4 8.60
8	3 4 22.65	22.06	17 21 33.7	31.2	9.731	40.01	3 42.49	15 52.45	1 6.71	3 8 5.15
9	3 8 16.50	15.89	17 37 25.4	22.9	9.755	39.28	3 45.20	15 52.23	1 6.79	3 12 1.71
10	3 12 10.93	10.31	17 52 59.3	56.8	9.780	38.54	3 47.34	15 52.02	1 6.87	3 15 58.27
11	3 16 5.94	5.32	+18 8 15.3	12.8	9.804	+37.79	−3 48.88	15 51.81	1 6.96	3 19 54.82
12	3 20 1.52	0.90	18 23 13.0	10.6	9.828	37.01	3 49.86	15 51.60	1 7.04	3 23 51.38
13	3 23 57.69	57.06	18 37 52.1	49.7	9.852	36.23	3 50.25	15 51.40	1 7.12	3 27 47.94
14	3 27 54.41	53.78	18 52 12.3	9.9	9.876	35.44	3 50.08	15 51.20	1 7.20	3 31 44.49
15	3 31 51.70	51.07	19 6 13.3	11.0	9.899	34.64	3 49.35	15 51.01	1 7.28	3 35 41.05
16	3 35 49.55	48.92	+19 19 55.0	52.9	9.922	+33.82	−3 48.06	15 50.82	1 7.36	3 39 37.61
17	3 39 47.95	47.32	+19 33 16.9	14.8	9.944	+33.00	−3 46.22	15 50.63	1 7.44	3 43 34.17

Note.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
May 17	3 39 47.95	47.32	+19 33 16.9	14.8	9.944	+33.00	−3 46.22	15 50.63	1 7.44	3 43 34.17
18	3 43 46.87	46.25	19 46 18.8	16.7	9.967	32.16	3 43.86	15 50.45	1 7.52	3 47 30.72
19	3 47 46.34	45.73	19 58 60.4	58.5	9.989	31.31	3 40.96	15 50.28	1 7.60	3 51 27.28
20	3 51 46.33	45.72	20 11 21.6	19.7	10.010	30.45	3 37.52	15 50.11	1 7.67	3 55 23.84
21	3 55 46.83	46.24	20 23 22.2	20.3	10.031	29.58	3 33.57	15 49.94	1 7.74	3 59 20.40
22	3 59 47.84	47.26	+20 34 61.6	59.9	10.052	+28.70	−3 29.12	15 49.77	1 7.82	4 3 16.95
23	4 3 49.36	48.79	20 46 20.0	18.4	10.073	27.82	3 24.16	15 49.61	1 7.89	4 7 13.51
24	4 7 51.38	50.82	20 57 17.0	15.4	10.094	26.93	3 18.71	15 49.45	1 7.96	4 11 10.07
25	4 11 53.87	53.34	21 7 52.3	50.9	10.114	26.02	3 12.77	15 49.29	1 8.03	4 15 6.63
26	4 15 56.86	56.33	21 18 5.8	4.6	10.134	25.10	3 6.35	15 49.13	1 8.10	4 19 3.18
27	4 19 60.30	59.80	+21 27 57.4	56.2	10.153	+24.18	−2 59.45	15 48.98	1 8.16	4 22 59.74
28	4 24 4.22	3.74	21 37 26.8	25.6	10.172	23.26	2 52.10	15 48.83	1 8.23	4 26 56.30
29	4 28 8.59	8.12	21 46 33.7	32.7	10.191	22.32	2 44.28	15 48.68	1 8.29	4 30 52.86
30	4 32 13.41	12.96	21 55 18.0	17.1	10.210	21.37	2 36.03	15 48.53	1 8.35	4 34 49.42
31	4 36 18.66	18.23	22 3 39.6	38.8	10.228	20.41	2 27.33	15 48.39	1 8.41	4 38 45.97
June 1	4 40 24.32	23.92	+22 11 38.2	37.4	10.244	+19.45	−2 18.24	15 48.25	1 8.46	4 42 42.53
2	4 44 30.38	30.02	22 19 13.5	12.9	10.260	18.48	2 8.72	15 48.11	1 8.51	4 46 39.09
3	4 48 36.84	36.50	22 26 25.7	25.1	10.276	17.51	1 58.83	15 47.98	1 8.56	4 50 35.65
4	4 52 43.67	43.35	22 33 14.3	13.8	10.292	16.53	1 48.56	15 47.85	1 8.61	4 54 32.21
5	4 56 50.84	50.55	22 39 39.2	38.8	10.306	15.55	1 37.94	15 47.72	1 8.66	4 58 28.77
6	5 0 58.35	58.10	+22 45 40.3	39.9	10.320	+14.55	−1 26.98	15 47.60	1 8.70	5 2 25.32
7	5 5 6.17	5.95	22 51 17.5	17.1	10.332	13.55	1 15.73	15 47.49	1 8.74	5 6 21.88
8	5 9 14.27	14.09	22 56 30.6	30.4	10.343	12.54	1 4.18	15 47.38	1 8.77	5 10 18.44
9	5 13 22.64	22.49	23 1 19.4	19.3	10.353	11.53	0 52.37	15 47.28	1 8.81	5 14 15.00
10	5 17 31.24	31.13	23 5 44.0	43.9	10.363	10.51	0 40.33	15 47.18	1 8.84	5 18 11.56
11	5 21 40.05	39.97	+23 9 44.1	44.0	10.371	+ 9.49	−0 28.07	15 47.08	1 8.86	5 22 8.12
12	5 25 49.05	48.99	23 13 19.7	19.7	10.378	8.47	0 15.63	15 46.99	1 8.88	5 26 4.67
13	5 29 58.20	58.18	23 16 30.7	30.7	10.384	7.45	−0 3.03	15 46.91	1 8.90	5 30 1.23
14	5 34 7.48	7.51	23 19 17.1	17.1	10.389	6.42	+0 9.69	15 46.84	1 8.92	5 33 57.79
15	5 38 16.87	16.93	23 21 38.7	38.7	10.393	5.39	0 22.52	15 46.77	1 8.94	5 37 54.35
16	5 42 26.34	26.44	+23 23 35.8	35.8	10.395	+ 4.36	+0 35.43	15 46.70	1 8.95	5 41 50.91
17	5 46 35.86	36.00	23 25 7.9	7.9	10.397	3.33	0 48.39	15 46.64	1 8.96	5 45 47.47
18	5 50 45.40	45.58	23 26 15.2	15.2	10.398	2.29	1 1.38	15 46.58	1 8.97	5 49 44.03
19	5 54 54.96	55.18	23 26 57.8	57.8	10.398	1.26	1 14.38	15 46.53	1 8.97	5 53 40.59
20	5 59 4.50	4.74	23 27 15.7	15.7	10.397	+ 0.23	1 27.36	15 46.48	1 8.97	5 57 37.15
21	6 3 14.00	14.29	+23 27 8.8	8.7	10.394	− 0.80	+1 40.30	15 46.43	1 8.97	6 1 33.70
22	6 7 23.43	23.76	23 26 37.1	37.0	10.391	1.83	1 53.18	15 46.39	1 8.96	6 5 30.26
23	6 11 32.78	33.14	23 25 40.7	40.5	10.387	2.86	2 5.97	15 46.35	1 8.95	6 9 26.82
24	6 15 42.03	42.43	23 24 19.6	19.3	10.383	3.89	2 18.67	15 46.32	1 8.94	6 13 23.38
25	6 19 51.16	51.59	23 22 33.8	33.5	10.378	4.92	2 31.25	15 46.29	1 8.92	6 17 19.94
26	6 24 0.16	0.62	+23 20 23.4	23.1	10.372	− 5.95	+2 43.68	15 46.26	1 8.90	6 21 16.50
27	6 28 8.99	9.49	23 17 48.5	48.2	10.364	6.97	2 55.95	15 46.24	1 8.87	6 25 13.06
28	6 32 17.65	18.19	23 14 49.0	48.6	10.356	7.99	3 8.06	15 46.21	1 8.84	6 29 9.61
29	6 36 26.12	26.69	23 11 25.1	24.7	10.348	9.00	3 19.97	15 46.19	1 8.81	6 33 6.17
30	6 40 34.36	34.97	23 7 36.9	36.3	10.339	10.02	3 31.66	15 46.17	1 8.78	6 37 2.73
31	6 44 42.38	43.02	+23 3 24.4	23.7	10.329	−11.03	+3 43.12	15 46.16	1 8.74	6 40 59.29
32	6 48 50.15	50.81	+22 58 47.6	46.9	10.318	−12.03	+3 54.32	15 46.15	1 8.70	6 44 55.85

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^s.19$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
ıly 1	6 44 42.38	43.02	+23 3 24.4	23.7	10.329	−11.03	+3 43.12	15 46.16	1 8.74	6 40 59.29
2	6 48 50.15	50.81	22 58 47.6	46.9	10.318	12.03	3 54.32	15 46.15	1 8.70	6 44 55.85
3	6 52 57.64	58.33	22 53 46.9	46.1	10.306	13.03	4 5.26	15 46.15	1 8.66	6 48 52.41
4	6 57 4.83	5.56	22 48 22.2	21.2	10.293	14.03	4 15.89	15 46.15	1 8.62	6 52 48.97
5	7 1 11.71	12.47	22 42 33.6	32.5	10.280	15.02	4 26.21	15 46.16	1 8.57	6 56 45.52
6	7 5 18.24	19.03	+22 36 21.3	20.0	10.265	−16.00	+4 36.20	15 46.17	1 8.52	7 0 42.08
7	7 9 24.42	25.24	22 29 45.3	44.1	10.250	16.98	4 45.83	15 46.18	1 8.46	7 4 38.64
8	7 13 30.23	31.07	22 22 46.1	44.6	10.233	17.96	4 55.07	15 46.21	1 8.41	7 8 35.20
9	7 17 35.64	36.50	22 15 23.6	22.0	10.216	18.92	5 3.91	15 46.24	1 8.35	7 12 31.76
10	7 21 40.62	41.51	22 7 38.0	36.3	10.198	19.87	5 12.34	15 46.27	1 8.29	7 16 28.32
11	7 25 45.16	46.06	+21 59 29.6	27.7	10.179	−20.82	+5 20.31	15 46.31	1 8.23	7 20 24.87
12	7 29 49.24	50.16	21 50 58.5	56.6	10.160	21.76	5 27.83	15 46.35	1 8.16	7 24 21.43
13	7 33 52.84	53.77	21 42 5.1	2.9	10.140	22.69	5 34.86	15 46.40	1 8.10	7 28 17.99
14	7 37 55.93	56.89	21 32 49.3	47.1	10.118	23.61	5 41.40	15 46.46	1 8.03	7 32 14.55
15	7 41 58.51	59.48	21 23 11.6	9.3	10.096	24.52	5 47.43	15 46.52	1 7.96	7 36 11.11
16	7 46 0.56	1.55	+21 13 12.2	9.7	10.074	−25.42	+5 52.92	15 46.58	1 7.88	7 40 7.67
17	7 50 2.06	3.07	21 2 51.2	48.6	10.051	26.31	5 57.87	15 46.66	1 7.80	7 44 4.22
18	7 54 3.03	4.04	20 52 8.9	6.3	10.028	27.20	6 2.26	15 46.74	1 7.73	7 48 0.78
19	7 58 3.41	4.43	20 41 5.6	2.8	10.005	28.07	6 6.09	15 46.82	1 7.65	7 51 57.34
20	8 2 3.24	4.26	20 29 41.5	38.5	9.981	28.93	6 9.35	15 46.90	1 7.57	7 55 53.90
21	8 6 2.49	3.52	+20 17 56.7	53.6	9.957	−29.78	+6 12.03	15 46.98	1 7.49	7 59 50.45
22	8 10 1.14	2.17	20 5 51.7	48.5	9.932	30.63	6 14.14	15 47.07	1 7.41	8 3 47.01
23	8 13 59.21	60.24	19 53 26.6	23.3	9.908	31.46	6 15.65	15 47.17	1 7.33	8 7 43.57
24	8 17 56.70	57.73	19 40 41.6	38.3	9.883	32.28	6 16.57	15 47.26	1 7.25	8 11 40.13
25	8 21 53.59	54.62	19 27 37.0	33.6	9.858	33.09	6 16.90	15 47.36	1 7.17	8 15 36.68
26	8 25 49.88	50.92	+19 14 13.3	9.7	9.834	−33.89	+6 16.64	15 47.46	1 7.08	8 19 33.24
27	8 29 45.60	46.62	19 0 30.3	26.7	9.809	34.68	6 15.80	15 47.57	1 7.00	8 23 29.80
28	8 33 40.71	41.73	18 46 28.5	24.8	9.785	35.46	6 14.35	15 47.68	1 6.91	8 27 26.35
29	8 37 35.24	36.25	18 32 8.0	4.3	9.760	36.23	6 12.32	15 47.79	1 6.82	8 31 22.91
30	8 41 29.18	30.19	18 17 29.2	25.5	9.735	36.99	6 9.70	15 47.90	1 6.74	8 35 19.47
31	8 45 22.53	23.52	+18 2 32.5	28.7	9.711	−37.74	+6 6.49	15 48.02	1 6.65	8 39 16.03
ug. 1	8 49 15.30	16.27	17 47 17.8	14.0	9.687	38.47	6 2.70	15 48.14	1 6.56	8 43 12.58
2	8 53 7.48	8.44	17 31 45.7	41.8	9.662	39.19	5 58.32	15 48.27	1 6.48	8 47 9.14
3	8 56 59.08	60.02	17 15 56.4	52.5	9.638	39.91	5 53.36	15 48.40	1 6.39	8 51 5.69
4	9 0 50.08	51.01	16 59 50.2	46.4	9.613	40.61	5 47.81	15 48.53	1 6.30	8 55 2.25
5	9 4 40.51	41.42	+16 43 27.3	23.4	9.589	−41.29	+5 41.68	15 48.67	1 6.22	8 58 58.81
6	9 8 30.35	31.25	16 26 48.1	44.3	9.565	41.96	5 34.96	15 48.81	1 6.13	9 2 55.37
7	9 12 19.62	20.49	16 9 53.0	49.1	9.541	42.62	5 27.67	15 48.96	1 6.05	9 6 51.92
8	9 16 8.31	9.15	15 52 42.2	38.4	9.517	43.27	5 19.79	15 49.11	1 5.96	9 10 48.48
9	9 19 56.40	57.22	15 35 16.0	12.4	9.493	43.90	5 11.34	15 49.27	1 5.88	9 14 45.03
10	9 23 43.94	44.73	+15 17 35.0	31.3	9.469	−44.52	+5 2.32	15 49.44	1 5.80	9 18 41.59
11	9 27 30.90	31.66	14 59 39.2	35.6	9.445	45.12	4 52.71	15 49.61	1 5.72	9 22 38.15
12	9 31 17.29	18.02	14 41 29.1	25.6	9.421	45.71	4 42.55	15 49.78	1 5.64	9 26 34.70
13	9 35 3.11	3.82	14 23 4.9	1.6	9.398	46.29	4 31.82	15 49.96	1 5.56	9 30 31.26
14	9 38 48.38	49.07	14 4 27.3	23.9	9.375	46.85	4 20.54	15 50.14	1 5.48	9 34 27.81
15	9 42 33.11	33.76	+13 45 36.1	32.9	9.352	−47.40	+4 8.71	15 50.32	1 5.41	9 38 24.37
16	9 46 17.30	17.92	+13 26 32.1	29.0	9.330	−47.93	+3 56.34	15 50.51	1 5.33	9 42 20.92

Note.—For mean *time interval of* semidiameter passing meridian, subtract $0^{s}.19$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Aug. 16	9 46 17.30	17.92	+13 26 32.1	29.0	9.330	−47.93	+ 3 56.34	15 50.51	1 5.33	9 42 20.92
17	9 50 0.96	1.54	13 7 15.3	12.3	9.309	48.46	3 43.45	15 50.70	1 5.26	9 46 17.48
18	9 53 44.10	44.64	12 47 46.2	43.4	9.288	48.97	3 30.04	15 50.90	1 5.19	9 50 14.03
19	9 57 26.74	27.25	12 28 4.9	2.2	9.267	49.46	3 16.12	15 51.10	1 5.12	9 54 10.59
20	10 1 8.90	9.37	12 8 11.8	9.3	9.247	49.94	3 1.73	15 51.30	1 5.05	9 58 7.14
21	10 4 50.58	51.01	+11 48 7.5	5.1	9.227	−50.42	+ 2 46.85	15 51.50	1 4.98	10 2 3.70
22	10 8 31.81	32.20	11 27 51.7	49.7	9.208	50.88	2 31.52	15 51.70	1 4.92	10 6 0.25
23	10 12 12.59	12.94	11 7 25.3	23.3	9.190	51.32	2 15.76	15 51.91	1 4.86	10 9 56.81
24	10 15 52.95	53.26	10 46 48.2	46.5	9.173	51.76	1 59.57	15 52.12	1 4.80	10 13 53.36
25	10 19 32.91	33.18	10 25 60.8	59.4	9.157	52.18	1 42.97	15 52.33	1 4.74	10 17 49.92
26	10 23 12.48	12.70	+10 5 3.4	2.3	9.141	−52.60	+ 1 25.99	15 52.54	1 4.68	10 21 46.47
27	10 26 51.70	51.87	9 43 56.2	55.3	9.126	52.99	1 8.66	15 52.76	1 4.62	10 25 43.03
28	10 30 30.56	30.69	9 22 39.7	39.1	9.112	53.38	0 50.96	15 52.98	1 4.57	10 29 39.58
29	10 34 9.07	9.16	9 1 14.1	13.7	9.098	53.75	0 32.94	15 53.20	1 4.52	10 33 36.14
30	10 37 47.28	47.32	8 39 39.7	39.5	9.085	54.10	+ 0 14.59	15 53.42	1 4.47	10 37 32.69
31	10 41 25.20	25.19	+ 8 17 56.9	56.9	9.074	−54.45	− 0 4.05	15 53.64	1 4.42	10 41 29.25
Sept. 1	10 45 2.83	2.77	7 56 5.8	6.2	9.063	54.79	0 22.97	15 53.86	1 4.38	10 45 25.80
2	10 48 40.19	40.08	7 34 6.9	7.6	9.052	55.11	0 42.15	15 54.09	1 4.34	10 49 22.35
3	10 52 17.31	17.15	7 12 0.5	1.6	9.042	55.41	1 1.59	15 54.32	1 4.30	10 53 18.91
4	10 55 54.19	53.99	6 49 47.0	48.4	9.033	55.70	1 21.25	15 54.55	1 4.27	10 57 15.46
5	10 59 30.85	30.60	+ 6 27 26.8	28.4	9.023	−55.98	− 1 41.13	15 54.79	1 4.23	11 1 12.02
6	11 3 7.31	7.01	6 5 0.0	2.0	9.015	56.24	2 1.22	15 55.03	1 4.20	11 5 8.57
7	11 6 43.59	43.24	5 42 27.3	29.6	9.008	56.49	2 21.50	15 55.28	1 4.18	11 9 5.12
8	11 10 19.70	19.29	5 19 48.8	51.4	9.001	56.72	2 41.94	15 55.53	1 4.16	11 13 1.68
9	11 13 55.64	55.18	4 57 4.9	7.8	8.995	56.93	3 2.54	15 55.78	1 4.14	11 16 58.23
10	11 17 31.44	30.93	+ 4 34 15.9	19.2	8.989	−57.13	− 3 23.29	15 56.04	1 4.12	11 20 54.79
11	11 21 7.12	6.56	4 11 22.4	26.0	8.984	57.32	3 44.16	15 56.30	1 4.10	11 24 51.34
12	11 24 42.69	42.08	3 48 24.4	28.4	8.980	57.49	4 5.13	15 56.56	1 4.09	11 28 47.89
13	11 28 18.16	17.50	3 25 22.6	27.0	8.977	57.65	4 26.22	15 56.82	1 4.08	11 32 44.45
14	11 31 53.57	52.85	3 2 17.2	21.9	8.975	57.80	4 47.36	15 57.08	1 4.07	11 36 41.00
15	11 35 28.92	28.16	+ 2 39 8.4	13.5	8.973	−57.93	− 5 8.55	15 57.35	1 4.07	11 40 37.55
16	11 39 4.24	3.42	2 15 56.7	62.1	8.971	58.04	5 29.79	15 57.62	1 4.07	11 44 34.11
17	11 42 39.54	38.67	1 52 42.4	48.1	8.971	58.15	5 51.03	15 57.89	1 4.07	11 48 30.66
18	11 46 14.86	13.93	1 29 25.7	31.8	8.972	58.24	6 12.26	15 58.16	1 4.07	11 52 27.21
19	11 49 50.20	49.22	1 6 7.0	13.4	8.974	58.31	6 33.48	15 58.43	1 4.08	11 56 23.77
20	11 53 25.60	24.57	+ 0 42 46.5	53.3	8.977	−58.38	− 6 54.62	15 58.70	1 4.09	12 0 20.32
21	11 56 61.08	59.99	+ 0 19 24.8	31.8	8.980	58.43	7 15.69	15 58.97	1 4.10	12 4 16.87
22	12 0 36.66	35.52	− 0 3 58.0	50.7	8.985	58.47	7 36.65	15 59.24	1 4.12	12 8 13.43
23	12 4 12.36	11.17	0 27 21.6	13.9	8.991	58.49	7 57.49	15 59.51	1 4.14	12 12 9.98
24	12 7 48.22	46.97	0 50 45.7	37.6	8.998	58.50	8 18.19	15 59.78	1 4.17	12 16 6.53
25	12 11 24.25	22.94	− 1 14 9.9	1.4	9.006	−58.51	− 8 38.71	16 0.05	1 4.20	12 20 3.09
26	12 14 60.47	59.12	1 37 33.9	25.2	9.014	58.49	8 59.04	16 0.31	1 4.23	12 23 59.64
27	12 18 36.92	35.51	2 0 57.4	48.3	9.024	58.46	9 19.15	16 0.58	1 4.26	12 27 56.20
28	12 22 13.61	12.16	2 24 20.0	10.6	9.034	58.42	9 39.01	16 0.85	1 4.29	12 31 52.75
29	12 25 50.56	49.06	2 47 41.4	31.7	9.046	58.36	9 58.61	16 1.12	1 4.33	12 35 49.30
30	12 29 27.80	26.25	− 3 10 61.2	51.3	9.058	−58.28	−10 17.92	16 1.39	1 4.37	12 39 45.86
31	12 33 5.34	3.73	− 3 34 19.2	8.9	9.071	−58.20	−10 36.92	16 1.66	1 4.41	12 43 42.41

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^s.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
ct. 1	12 33 5.34	3.73	− 3 34 19.2	8.9	9.071	−58.20	−10 36.92	16 1.66	1 4.41	12 43 42.41
2	12 36 43.22	41.57	3 57 34.8	24.2	9.085	58.09	10 55.60	16 1.93	1 4.46	12 47 38.96
3	12 40 21.43	19.72	4 20 47.7	36.8	9.099	57.97	11 13.94	16 2.21	1 4.51	12 51 35.52
4	12 43 60.01	58.26	4 43 57.6	46.4	9.115	57.84	11 31.92	16 2.48	1 4.56	12 55 32.07
5	12 47 38.97	37.17	5 6 64.0	52.5	9.132	57.68	11 49.51	16 2.75	1 4.61	12 59 28.62
6	12 51 18.32	16.48	− 5 29 66.5	54.9	9.149	−57.51	−12 6.72	16 3.03	1 4.67	13 3 25.18
7	12 54 58.07	56.18	5 52 64.8	52.9	9.166	57.33	12 23.52	16 3.31	1 4.73	13 7 21.73
8	12 58 38.27	36.32	6 15 58.6	46.4	9.184	57.13	12 39.89	16 3.59	1 4.80	13 11 18.29
9	13 2 18.89	16.91	6 38 47.2	34.9	9.203	56.91	12 55.80	16 3.87	1 4.87	13 15 14.84
10	13 5 59.99	57.96	7 1 30.5	17.9	9.222	56.68	13 11.27	16 4.15	1 4.94	13 19 11.39
11	13 9 41.55	39.48	− 7 23 67.8	55.2	9.242	−56.42	−13 26.26	16 4.43	1 5.01	13 23 7.95
12	13 13 23.61	21.50	7 46 39.0	26.2	9.263	56.16	13 40.76	16 4.71	1 5.09	13 27 4.50
13	13 17 6.17	4.02	8 8 63.7	50.8	9.285	55.88	13 54.75	16 4.99	1 5.17	13 31 1.05
14	13 20 49.26	47.06	8 31 21.4	8.3	9.307	55.58	14 8.22	16 5.27	1 5.25	13 34 57.61
15	13 24 32.90	30.66	8 53 31.7	18.5	9.330	55.27	14 21.15	16 5.55	1 5.33	13 38 54.16
16	13 28 17.09	14.82	− 9 15 34.4	21.0	9.354	−54.94	−14 33.50	16 5.83	1 5.42	13 42 50.72
17	13 31 61.86	59.55	9 37 28.9	15.4	9.378	54.59	14 45.30	16 6.11	1 5.51	13 46 47.27
18	13 35 47.23	44.88	9 59 15.0	1.5	9.404	54.23	14 56.48	16 6.38	1 5.60	13 50 43.83
19	13 39 33.21	30.83	10 20 52.3	38.8	9.430	53.86	15 7.07	16 6.66	1 5.69	13 54 40.38
20	13 43 19.83	17.41	10 42 20.4	6.8	9.456	53.47	15 17.01	16 6.93	1 5.78	13 58 36.93
21	13 47 7.10	4.67	−11 3 39.1	25.4	9.484	−53.07	−15 26.29	16 7.20	1 5.88	14 2 33.49
22	13 50 55.05	52.58	11 24 47.7	34.1	9.512	52.65	15 34.91	16 7.46	1 5.98	14 6 30.04
23	13 54 43.69	41.19	11 45 46.0	32.4	9.541	52.21	15 42.83	16 7.73	1 6.08	14 10 26.60
24	13 58 33.05	30.52	12 6 33.8	20.1	9.572	51.76	15 50.03	16 7.99	1 6.18	14 14 23.15
25	14 2 23.13	20.57	12 26 70.4	56.8	9.603	51.29	15 56.52	16 8.24	1 6.28	14 18 19.71
26	14 6 13.95	11.37	−12 47 35.6	22.1	9.634	−50.80	−16 2.26	16 8.49	1 6.39	14 22 16.26
27	14 10 5.53	2.94	13 7 49.1	35.6	9.666	50.30	16 7.23	16 8.74	1 6.50	14 26 12.82
28	14 13 57.90	55.28	13 27 50.2	36.8	9.698	49.79	16 11.43	16 8.99	1 6.61	14 30 9.37
29	14 17 51.04	48.40	13 47 38.8	25.5	9.731	49.25	16 14.85	16 9.24	1 6.72	14 34 5.93
30	14 21 44.98	42.33	14 7 14.3	1.1	9.764	48.70	16 17.47	16 9.49	1 6.83	14 38 2.48
31	14 25 39.73	37.07	−14 26 36.2	23.2	9.798	−48.12	−16 19.29	16 9.73	1 6.94	14 41 59.04
ov. 1	14 29 35.31	32.63	14 45 44.3	31.4	9.832	47.53	16 20.28	16 9.98	1 7.05	14 45 55.59
2	14 33 31.70	29.01	15 4 38.0	25.2	9.867	46.93	16 20.45	16 10.22	1 7.17	14 49 52.15
3	14 37 28.92	26.22	15 23 17.0	4.4	9.901	46.31	16 19.80	16 10.46	1 7.29	14 53 48.71
4	14 41 26.97	24.27	15 41 40.8	28.4	9.936	45.67	16 18.31	16 10.70	1 7.41	14 57 45.26
5	14 45 25.86	23.16	−15 59 49.0	36.8	9.971	−45.01	−16 15.99	16 10.94	1 7.52	15 1 41.82
6	14 49 25.58	22.88	16 17 41.0	29.0	10.005	44.33	16 12.84	16 11.18	1 7.64	15 5 38.37
7	14 53 26.14	23.44	16 35 16.6	4.8	10.040	43.63	16 8.85	16 11.41	1 7.76	15 9 34.93
8	14 57 27.54	24.84	16 52 35.3	23.9	10.075	42.92	16 4.02	16 11.65	1 7.88	15 13 31.49
9	15 1 29.76	27.07	17 9 36.7	25.6	10.110	42.19	15 58.35	16 11.88	1 8.00	15 17 28.04
10	15 5 32.83	30.15	−17 26 20.5	9.6	10.145	−41.44	−15 51.85	16 12.11	1 8.12	15 21 24.60
11	15 9 36.72	34.06	17 42 46.0	35.4	10.179	40.68	15 44.52	16 12.34	1 8.24	15 25 21.15
12	15 13 41.45	38.79	17 58 53.1	42.8	10.214	39.90	15 36.35	16 12.57	1 8.36	15 29 17.71
13	15 17 47.01	44.36	18 14 41.3	31.2	10.248	39.11	15 27.37	16 12.79	1 8.48	15 33 14.27
14	15 21 53.38	50.76	18 30 10.1	0.4	10.283	38.29	15 17.55	16 13.01	1 8.59	15 37 10.83
15	15 25 60.59	58.00	− 18 45 19.4	10.0	10.317	−37.47	−15 6.90	16 13.22	1 8.71	15 41 7.38
16	15 30 8.62	6.04	−18 59 68.6	59.6	10.351	−36.63	−14 55.44	16 13.43	1 8.82	15 45 3.94

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Nov. 16	15 30 8.62	6.04	−18 59 68.6	59.6	10.351	−36.63	−14 55.44	16 13.43	1 8.82	15 45 3.94
17	15 34 17.47	14.92	19 14 37.5	28.8	10.385	35.77	14 43.16	16 13.64	1 8.94	15 49 0.49
18	15 38 27.13	24.61	19 28 45.7	37.2	10.419	34.90	14 30.05	16 13.84	1 9.05	15 52 57.05
19	15 42 37.62	35.13	19 42 32.6	24.6	10.453	34.02	14 16.14	16 14.04	1 9.16	15 56 53.61
20	15 46 48.90	46.45	19 55 58.2	50.4	10.487	33.11	14 1.42	16 14.23	1 9.27	16 0 50.17
21	15 50 60.98	58.57	−20 8 62.0	54.6	10.520	−32.19	−13 45.88	16 14.42	1 9.38	16 4 46.72
22	15 55 13.87	11.50	20 21 43.6	36.6	10.553	31.27	13 29.57	16 14.61	1 9.49	16 8 43.28
23	15 59 27.55	25.22	20 33 62.7	56.1	10.586	30.32	13 12.45	16 14.79	1 9.60	16 12 39.84
24	16 3 42.00	39.71	20 45 59.0	52.7	10.618	29.36	12 54.56	16 14.96	1 9.70	16 16 36.40
25	16 7 57.23	54.99	20 57 32.1	26.1	10.650	28.39	12 35.89	16 15.13	1 9.80	16 20 32.95
26	16 12 13.21	11.02	−21 8 41.7	36.1	10.681	−27.41	−12 16.47	16 15.29	1 9.90	16 24 29.51
27	16 16 29.92	27.80	21 19 27.5	22.2	10.711	26.40	11 56.31	16 15.45	1 10.00	16 28 26.07
28	16 20 47.37	45.29	21 29 49.1	44.1	10.741	25.39	11 35.43	16 15.60	1 10.10	16 32 22.63
29	16 25 5.52	3.50	21 39 46.1	41.5	10.770	24.37	11 13.84	16 15.75	1 10.19	16 36 19.19
30	16 29 24.36	22.40	21 49 18.5	14.3	10.799	23.33	10 51.56	16 15.90	1 10.27	16 40 15.74
Dec. 1	16 33 43.85	41.96	−21 58 25.7	21.9	10.826	−22.27	−10 28.62	16 16.05	1 10.36	16 44 12.30
2	16 38 3.98	2.16	22 7 7.6	4.0	10.851	21.21	10 5.04	16 16.19	1 10.44	16 48 8.86
3	16 42 24.73	22.97	22 15 23.6	20.4	10.876	20.14	9 40.85	16 16.33	1 10.52	16 52 5.42
4	16 46 46.04	44.36	22 23 13.8	10.9	10.900	19.04	9 16.09	16 16.47	1 10.59	16 56 1.98
5	16 51 7.92	6.30	22 30 37.9	35.3	10.922	17.94	8 50.77	16 16.60	1 10.66	16 59 58.53
6	16 55 30.31	28.78	−22 37 35.4	33.1	10.943	−16.84	− 8 24.93	16 16.73	1 10.73	17 3 55.09
7	16 59 53.20	51.74	22 44 6.4	4.4	10.963	15.73	7 58.59	16 16.86	1 10.80	17 7 51.65
8	17 4 16.54	15.17	22 50 10.6	8.7	10.982	14.61	7 31.81	16 16.98	1 10.86	17 11 48.21
9	17 8 40.31	39.01	22 55 47.7	46.0	10.998	13.48	7 4.59	16 17.09	1 10.92	17 15 44.77
10	17 13 4.47	3.26	23 0 57.4	56.1	11.014	12.34	6 36.99	16 17.20	1 10.97	17 19 41.33
11	17 17 28.98	27.86	−23 5 39.9	38.8	11.029	−11.19	− 6 9.02	16 17.31	1 11.02	17 23 37.89
12	17 21 53.84	52.79	23 9 54.8	53.9	11.041	10.04	5 40.72	16 17.42	1 11.07	17 27 34.45
13	17 26 18.98	18.02	23 13 42.1	41.4	11.052	8.89	5 12.13	16 17.52	1 11.11	17 31 31.00
14	17 30 44.38	43.52	23 17 1.6	1.0	11.063	7.73	4 43.26	16 17.62	1 11.15	17 35 27.56
15	17 35 10.03	9.25	23 19 53.2	52.8	11.073	6.57	4 14.17	16 17.71	1 11.18	17 39 24.12
16	17 39 35.87	35.20	−23 22 16.9	16.5	11.080	− 5.40	− 3 44.87	16 17.80	1 11.21	17 43 20.68
17	17 44 1.90	1.30	23 24 12.4	12.3	11.087	4.23	3 15.41	16 17.88	1 11.23	17 47 17.24
18	17 48 28.06	27.56	23 25 39.9	39.9	11.093	3.06	2 45.79	16 17.95	1 11.25	17 51 13.80
19	17 52 54.34	53.92	23 26 39.3	39.3	11.097	1.89	2 16.06	16 18.02	1 11.26	17 55 10.36
20	17 57 20.70	20.37	23 27 10.6	10.6	11.099	− 0.71	1 46.26	16 18.08	1 11.27	17 59 6.92
21	18 1 47.12	46.88	−23 27 13.3	13.3	11.101	+ 0.47	− 1 16.39	16 18.13	1 11.28	18 3 3.47
22	18 6 13.57	13.42	23 26 48.0	48.0	11.102	1.64	0 46.48	16 18.18	1 11.28	18 7 0.03
23	18 10 40.00	39.95	23 25 54.3	54.3	11.101	2.82	− 0 16.60	16 18.22	1 11.27	18 10 56.59
24	18 15 6.39	6.43	23 24 32.4	32.4	11.098	4.00	+ 0 13.25	16 18.26	1 11.26	18 14 53.15
25	18 19 32.72	32.86	23 22 42.2	42.1	11.094	5.18	0 43.03	16 18.29	1 11.25	18 18 49.71
26	18 23 58.96	59.19	−23 20 23.8	23.7	11.090	+ 6.35	+ 1 12.72	16 18.31	1 11.23	18 22 46.27
27	18 28 25.06	25.38	23 17 37.4	37.1	11.084	7.52	1 42.27	16 18.33	1 11.20	18 26 42.83
28	18 32 50.99	51.39	23 14 22.8	22.5	11.076	8.69	2 11.65	16 18.34	1 11.17	18 30 39.39
29	18 37 16.72	17.22	23 10 40.2	39.7	11.067	9.86	2 40.84	16 18.35	1 11.14	18 34 35.94
30	18 41 42.22	42.81	23 6 29.7	29.2	11.057	11.02	3 9.79	16 18.36	1 11.11	18 38 32.50
31	18 46 7.47	8.13	−23 1 51.4	50.7	11.046	+12.18	+ 3 38.47	16 18.36	1 11.07	18 42 29.06
32	18 50 32.38	33.14	−22 56 45.5	44.6	11.032	+13.32	+ 4 6.85	16 18.36	1 11.02	18 46 25.62

Note.—For mean time interval of semidiameter passing meridian, subtract 0^s.19 from the sidereal interval.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

ate.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
n. 1	13 26.36	2.417	8 11 59.87	155.23	+22 58 45.4	− 644.5	73.55	16 13.7	59 27.1	II. S.
2	14 22.56	2.265	9 12 17.72	146.13	17 58 49.5	− 844.6	71.33	16 17.9	59 42.6	II. S.
3	15 15.19	2.126	10 9 0.67	137.77	11 52 34.6	− 974.9	69.25	16 19.0	59 46.4	II. S.
4	16 4.96	2.031	11 2 51.98	132.06	+ 5 7 50.3	−1038.0	67.80	16 17.1	59 39.6	II. S.
5	16 53.13	1.993	11 55 6.47	129.76	− 1 49 44.6	−1040.4	67.24	16 13.1	59 24.7	II. S.
6	17 41.10	2.014	12 47 9.17	131.03	− 8 37 10.5	− 987.9	67.61	16 7.4	59 4.0	II. S.
7	18 30.23	2.088	13 40 21.52	135.47	−14 53 9.6	− 883.4	68.77	16 0.8	58 39.6	II. S.
8	19 21.60	2.197	14 35 48.88	142.05	−20 17 4.1	− 727.6	70.45	15 53.6	58 13.1	II. S.
9	20 15.75	2.313	15 34 3.55	149.03	−24 28 46.7	− 523.2	72.16	15 46.0	57 45.1	II. S.
10	21 12.36	2.394	16 34 45.61	153.90	−27 10 28.8	− 280.3	73.31	15 38.1	57 16.2	II. S.
11	22 10.08	2.402	17 36 35.25	154.37	−28 10 31.5	− 19.4	73.35	15 30.0	56 46.4	II. N.
12	23 6.96	2.324	18 37 33.46	149.67	−27 27 21.7	+ 231.0	72.13	15 21.8	56 16.3	II. N.
14	0 1.12	2.182	19 35 48.42	141.12	−25 10 24.2	446.3	69.94	15 13.6	55 46.3	II. N.
15	0 51.48	2.014	20 30 14.99	131.05	−21 36 44.8	613.6	67.32	15 5.8	55 17.7	I. N. S.
16	1 37.89	1.858	21 20 44.01	121.62	−17 6 5.8	731.9	64.81	14 58.8	54 51.8	I. S.
17	2 20.90	1.733	22 7 47.99	114.13	−11 56 52.0	+ 807.7	62.76	14 52.9	54 30.3	I. S.
18	3 1.41	1.651	22 52 21.96	109.17	− 6 24 31.4	848.9	61.43	14 48.8	54 15.0	I. S.
19	3 40.50	1.615	23 35 30.58	107.01	− 0 41 34.5	861.6	60.88	14 46.7	54 7.6	I. S.
20	4 19.31	1.627	0 18 22.03	107.77	+ 5 1 31.3	849.8	61.15	14 47.2	54 9.4	I, S.
21	4 59.00	1.688	1 2 6.45	111.46	10 35 3.1	813.6	62.27	14 50.5	54 21.6	I. S.
22	5 40.76	1.799	1 47 55.23	118.11	+15 48 34.3	+ 748.8	64.18	14 56.8	54 44.7	I. S.
23	6 25.74	1.956	2 36 58.20	127.56	20 29 18.4	648.0	66.77	15 6.1	55 18.6	I. S.
24	7 14.93	2.147	3 30 14.36	139.02	24 20 49.6	501.0	69.76	15 18.0	56 2.4	I. S.
25	8 8.82	2.341	4 28 12.86	150.68	27 2 45.7	299.2	72.68	15 32.0	56 53.8	I. S.
26	9 6.94	2.491	5 30 26.44	159.73	28 13 1.1	+ 44.1	74.84	15 47.2	57 49.8	I. N.
27	10 7.67	2.552	6 35 16.61	163.37	+27 33 28.3	− 245.0	75.66	16 2.4	58 45.5	I. N.
28	11 8.58	2.508	7 40 18.02	160.78	24 57 22.1	− 531.8	74.97	16 16.0	59 35.3	I. N.
29	12 7.49	2.392	8 43 18.62	153.80	20 33 28.6	− 778.1	73.23	16 26.4	60 13.7	I. N.
30	13 3.27	2.256	9 43 10.92	145.60	14 43 51.6	− 957.4	71.19	16 32.6	60 36.4	II. S.
31	13 55.99	2.144	10 39 59.44	138.84	7 57 45.2	−1060.1	69.49	16 34.0	60 41.6	II. S.
eb. 1	14 46.55	2.079	11 34 38.06	134.92	+ 0 45 47.0	−1087.7	68.53	16 30.8	60 29.7	II. S.
2	15 36.22	2.070	12 28 23.03	134.37	− 6 23 19.1	−1047.1	68.45	16 23.7	60 3.7	II. S.
3	16 26.32	2.113	13 22 33.45	136.96	−13 3 50.5	− 946.0	69.19	16 14.0	59 28.0	II. S.
4	17 17.95	2.194	14 18 16.33	141.89	−18 52 55.6	− 791.0	70.51	16 2.7	58 46.7	II. S.
5	18 11.77	2.290	15 16 10.85	147.63	−23 30 24.2	− 589.2	71.97	15 51.0	58 3.7	II. S.
6	19 7.69	2.363	16 16 11.79	152.03	−26 39 31.7	− 351.6	73.06	15 39.7	57 22.1	II. S.
7	20 4.74	2.379	17 17 20.77	152.99	−28 9 16.5	− 96.0	73.24	15 29.1	56 43.3	II. S.
8	21 1.28	2.320	18 17 59.31	149.46	−27 57 3.3	+ 154.1	72.28	15 19.6	56 8.4	II. N.
9	21 55.61	2.199	19 16 24.76	142.15	−26 9 42.9	376.4	70.35	15 11.2	55 37.5	II. N.
10	22 46.58	2.046	20 11 27.60	132.94	−23 1 30.8	557.1	67.89	15 3.8	55 10.4	II. N.
11	23 33.83	1.894	21 2 46.69	123.80	−18 50 12.8	+ 692.0	65.40	14 57.6	54 47.3	II. N.
13	0 17.68	1.766	21 50 41.74	116.11	−13 53 38.0	784.3	63.26	14 52.3	54 28.0	I. II. N.
14	0 58.89	1.675	22 35 57.44	110.60	− 8 27 46.2	839.5	61.71	14 48.3	54 13.2	I. S.
15	1 38.39	1.624	23 19 30.45	107.58	− 2 46 19.6	862.9	60.88	14 45.6	54 3.4	I. S.
16	2 17.20	1.617	0 2 21.99	107.16	+ 2 58 53.7	+ 858.8	60.81	14 44.6	53 59.7	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Feb. 16	2 17.20	1.617	0 2 21.99	107.16	+ 2 58 53.7	+ 858.8	60.81	14 44.6	53 59.7	I. S.
17	2 56.36	1.654	0 45 35.12	109.39	8 37 12.7	828.5	61.53	14 45.6	54 3.4	I. S.
18	3 36.96	1.736	1 30 13.78	114.28	13 58 0.2	770.7	63.00	14 48.9	54 15.4	I. S.
19	4 20.02	1.860	2 17 21.17	121.74	18 49 36.0	681.5	65.15	14 54.7	54 36.9	I. S.
20	5 6.50	2.019	3 7 54.48	131.32	22 58 8.9	554.2	67.79	15 3.3	55 8.5	I. S.
21	5 57.07	2.195	4 2 33.09	141.93	+26 6 57.0	+ 381.8	70.59	15 14.6	55 50.1	I. S.
22	6 51.75	2.356	5 1 19.64	151.59	27 57 4.7	+ 161.1	73.02	15 28.5	56 40.9	I. S.
23	7 49.69	2.460	6 3 22.44	157.89	28 10 20.3	− 100.3	74.54	15 44.2	57 38.7	I. N.
24	8 49.18	2.482	7 6 57.87	159.17	26 34 24.1	− 380.1	74.78	16 0.8	58 39.5	I. N.
25	9 48.19	2.425	8 10 5.01	155.78	23 7 56.7	− 647.2	73.87	16 16.8	59 38.2	I. N.
26	10 45.25	2.326	9 11 14.45	149.80	+18 2 28.8	− 870.6	72.33	16 30.3	60 28.0	I. N.
27	11 39.86	2.228	10 9 56.37	143.88	11 40 8.0	−1028.9	70.79	16 39.9	61 3.3	I. N.
28	12 32.44	2.161	11 6 36.54	139.89	+ 4 29 36.0	−1110.5	69.76	16 44.2	61 18.9	II. S.
29	13 24.00	2.144	12 2 15.16	138.84	− 2 57 39.8	−1112.6	69.51	16 42.6	61 13.3	II. S.
Mar. 1	14 15.75	2.177	12 58 5.30	140.82	−10 10 17.7	−1038.2	70.07	16 35.7	60 47.6	II. S.
2	15 8.81	2.250	13 55 13.86	145.20	−16 38 58.4	− 894.3	71.27	16 24.5	60 6.5	II. S.
3	16 3.87	2.339	14 54 23.15	150.57	−21 57 56.4	− 691.8	72.69	16 10.6	59 15.5	II. S.
4	17 0.92	2.409	15 55 32.11	154.78	−25 46 43.0	− 446.5	73.79	15 55.6	58 20.4	II. S.
5	17 59.05	2.423	16 57 45.81	155.64	−27 52 23.6	− 180.5	74.02	15 40.8	57 26.2	II. S.
6	18 56.63	2.363	17 59 26.77	152.01	−28 11 52.7	+ 80.1	73.10	15 27.2	56 36.4	II. N. s.
7	19 51.94	2.238	18 58 51.15	144.51	−26 52 8.8	+ 312.4	71.16	15 15.4	55 53.0	II. N.
8	20 43.79	2.080	19 54 47.25	135.01	−24 7 36.2	502.8	68.63	15 5.6	55 16.9	II. N.
9	21 31.80	1.923	20 46 52.09	125.53	−20 15 53.8	648.3	66.02	14 57.8	54 48.1	II. N.
10	22 16.27	1.789	21 35 24.38	117.48	−15 34 29.9	752.2	63.74	14 51.8	54 26.3	II. N.
11	22 57.94	1.691	22 21 8.02	111.56	−10 19 2.9	819.5	62.01	14 47.5	54 10.5	II. N.
12	23 37.73	1.632	23 4 58.50	108.07	− 4 43 6.7	+ 855.2	60.97	14 44.8	54 0.6	II. N.
14	0 16.63	1.616	23 47 55.14	107.07	+ 1 1 19.0	862.3	60.67	14 43.6	53 56.2	I. S.
15	0 55.63	1.641	0 30 57.86	108.57	6 43 4.3	841.8	61.12	14 43.9	53 57.1	I. S.
16	1 35.71	1.706	1 15 6.05	112.52	12 11 0.1	792.8	62.30	14 45.8	54 4.0	I. S.
17	2 17.84	1.810	2 1 17.07	118.76	17 13 11.2	712.5	64.12	14 49.4	54 17.2	I. S.
18	3 2.86	1.946	2 50 22.35	126.94	+21 36 13.4	+ 596.4	66.43	14 54.9	54 37.6	I. S.
19	3 51.39	2.099	3 42 58.61	136.16	25 4 52.2	439.9	68.96	15 2.7	55 6.1	I. S.
20	4 43.56	2.245	4 39 14.24	144.91	27 22 31.0	241.4	71.28	15 12.7	55 42.9	I. S.
21	5 38.82	2.351	5 38 35.65	151.31	28 13 5.9	+ 6.2	72.92	15 25.0	56 28.1	I. S.
22	6 35.90	2.393	6 39 45.83	153.82	27 24 29.8	− 251.2	73.55	15 39.3	57 20.5	I. N.
23	7 33.14	2.367	7 41 6.26	152.28	+24 52 11.6	− 508.2	73.13	15 54.9	58 17.8	I. N.
24	8 29.17	2.297	8 41 13.85	148.07	20 41 10.0	− 741.0	72.02	16 10.7	59 16.0	I. N.
25	9 23.34	2.219	9 39 29.82	143.34	15 5 17.7	− 929.5	70.74	16 25.4	60 9.8	I. N.
26	10 15.85	2.163	10 36 5.24	139.96	8 25 25.5	−1058.9	69.81	16 37.1	60 53.1	I. N.
27	11 7.49	2.149	11 31 48.92	139.18	+ 1 7 34.8	−1117.8	69.56	16 44.4	61 19.7	I. N.
28	11 59.42	2.187	12 27 49.99	141.43	− 6 18 27.3	−1098.9	70.13	16 46.0	61 25.5	I. S.
29	12 52.83	2.270	13 25 19.97	146.46	−13 20 41.5	− 998.8	71.42	16 41.7	61 9.7	II. S.
30	13 48.62	2.380	14 25 12.79	153.04	−19 27 9.3	− 821.4	73.12	16 32.0	60 34.1	II. S.
31	14 46.98	2.478	15 27 40.67	158.93	−24 9 15.4	− 580.2	74.64	16 18.3	59 44.0	II. S.
32	15 47.10	2.519	16 31 54.05	161.40	−27 6 10.9	− 300.7	75.30	16 2.4	58 45.4	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

)ate.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
pr. 1	15 47.10	2.519	16 31 54.05	161.40	−27 6 10.9	− 300.7	75.30	16 2.4	58 45.4	II. S.
2	16 47.17	2.472	17 36 4.89	158.60	−28 9 13.9	− 16.8	74.68	15 45.9	57 45.0	II. S.
3	17 45.08	2.343	18 38 5.57	150.79	−27 23 19.5	+ 239.6	72.78	15 30.3	56 47.7	II. N.
4	18 39.24	2.167	19 36 20.53	140.22	−25 3 51.1	449.2	70.09	15 16.6	55 57.2	II. N.
5	19 29.05	1.986	20 30 13.73	129.36	−21 30 45.6	608.0	67.19	15 5.1	55 15.2	II. N.
6	20 14.78	1.831	21 20 1.72	119.99	−17 3 32.6	+ 721.1	64.58	14 56.3	54 42.6	II. N.
7	20 57.23	1.715	22 6 32.54	113.01	−11 58 53.3	796.5	62.55	14 50.0	54 19.4	II. N.
8	21 37.43	1.643	22 50 47.44	108.68	− 6 30 29.7	840.6	61.24	14 46.0	54 4.7	II. N.
9	22 16.44	1.615	23 33 50.72	107.04	− 0 50 0.6	857.4	60.70	14 44.1	53 57.9	II. N.
10	22 55.30	1.631	0 16 45.78	107.99	+ 4 51 54.9	847.8	60.92	14 44.0	53 57.7	II. N.
11	23 35.05	1.688	1 0 33.91	111.44	+10 24 28.9	+ 810.1	61.89	14 45.6	54 3.6	II. S.
13	0 16.65	1.784	1 46 13.25	117.21	15 35 51.6	741.1	. 63.52	14 48.7	54 14.9	I. S.
14	1 0.95	1.912	2 34 35.04	124.88	20 12 33.1	636.0	65.66	14 53.2	54 31.3	I. S.
15	1 48.56	2.057	3 26 15.91	133.60	23 59 11.4	490.3	68.03	14 59.0	54 52.8	I. S.
16	2 39.63	2.196	4 21 25.06	141.95	26 39 14.2	303.3	70.27	15 6.3	55 19.6	I. S.
17	3 33.65	2.298	5 19 31.83	148.09	+27 56 59.9	+ 80.5	71.92	15 15.2	55 52.1	I. S.
18	4 29.43	2.339	6 19 23.89	150.55	27 40 47.0	− 163.5	72.59	15 25.6	56 30.2	I. N. S.
19	5 25.38	2.314	7 19 26.86	149.09	25 46 4.3	− 408.3	72.26	15 37.4	57 13.6	I. N.
20	6 20.15	2.245	8 18 18.59	144.94	22 16 42.4	− 633.8	71.22	15 50.3	58 1.0	I. N.
21	7 13.04	2.164	9 15 17.39	140.02	17 23 49.8	− 823.8	69.94	16 3.7	58 50.1	I. N.
22	8 4.16	2.102	10 10 29.66	136.31	+11 23 41.2	− 968.5	68.93	16 16.6	59 37.5	I. N.
23	8 54.26	2.081	11 4 40.34	135.07	+ 4 36 11.6	−1059.2	68.54	16 27.7	60 18.5	I. N.
24	9 44.48	2.113	11 58 58.40	136.98	− 2 35 21.1	−1087.2	68.98	16 35.8	60 48.1	I. N.
25	10 36.13	2.199	12 54 42.30	142.18	− 9 43 55.6	−1042.8	70.27	16 39.4	61 1.4	I. N.
26	11 30.40	2.328	13 53 3.93	149.94	−16 19 0.6	− 919.0	72.21	16 37.9	60 56.0	I. S.
27	12 27.99	2.469	14 54 45.26	158.39	−21 48 26.9	− 715.8	74.30	16 31.2	60 31.2	II. S.
28	13 28.60	2.571	15 59 28.68	164.55	−25 42 57.7	− 448.4	75.83 .	16 20.0	59 50.0	II. S.
29	14 30.67	2.583	17 5 39.13	165.24	−27 42 56.2	− 149.8	76.06	16 5.6	58 57.4	II. S.
30	15 31.68	2.485	18 10 46.83	159.37	−27 44 19.4	+ 137.7	74.71	15 49.8	57 59.2	II. S.
lay 1	16 29.31	2.308	19 12 30.62	148.72	−25 58 51.9	380.4	72.13	15 34.0	57 1.3	II. N.
2	17 22.26	2.104	20 9 32.91	136.45	−22 47 53.1	+ 564.7	69.03	15 19.6	56 8.4	II. N.
3	18 10.45	1.917	21 1 48.60	125.18	−18 34 28.1	694.0	66.03	15 7.4	55 23.4	II. N.
4	18 54.60	1.770	21 50 1.29	116.35	−13 38 39.3	778.6	63.58	14 57.7	54 48.0	II. N.
5	19 35.80	1.672	22 35 16.72	110.44	− 8 16 13.1	828.6	61.86	14 51.0	54 23.1	II. N.
6	20 15.25	1.623	23 18 46.42	107.52	− 2 39 27.6	850.9	60.96	14 47.0	54 8.4	II. N.
7	20 54.10	1.623	0 1 40.88	107.48	+ 3 1 17.8	+ 848.7	60.88	14 45.6	54 3.3	II. N.
8	21 33.50	1.668	0 45 7.79	110.22	8 36 9.7	821.1	61.61	14 46.5	54 6.9	II. N.
9	22 14.51	1.756	1 30 11.28	115.49	13 54 21.9	764.5	63.05	14 49.5	54 17.7	II. N.
10	22 58.08	1.881	2 17 49.50	123.01	18 43 11.8	673.2	65.09	14 54.1	54 34.5	II. N. S.
11	23 44.97	2.029	3 8 47.06	131.93	22 47 28.9	540.9	67.46	15 0.0	54 56.2	II. S.
13	0 35.48	2.178	4 3 22.52	140.86	+25 50 3.0	+ 364.6	69.80	15 6.9	55 21.5	I. S.
14	1 29.23	2.293	5 1 12.70	147.81	27 33 44.1	+ 148.0	71.60	15 14.6	55 49.9	I. S.
15	2 25.02	2.345	6 1 6.36	150.91	27 45 1.0	− 94.2	72.44	15 22.9	56 20.5	I. S.
16	3 21.17	2.323	7 1 20.86	149.58	26 17 57.6	− 339.5	72.17	15 31.8	56 53.2	I. N.
17	4 16.05	2.244	8 0 19.20	144.90	+23 16 2.8	− 565.1	71.05	15 41.2	57 27.5	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
May 17	4 16.05	2.244	8 0 19.20	144.90	+23 16 2.8	− 565.1	71.05	15 41.2	57 27.5	I. N.
18	5 8.73	2.145	8 57 5.01	138.92	18 50 44.9	− 754.5	69.56	15 50.8	58 3.0	I. N.
19	5 59.13	2.060	9 51 34.29	133.80	13 18 20.9	− 899.7	68.25	16 0.5	58 38.6	I. N.
20	6 47.93	2.014	10 44 26.39	131.02	6 57 21.5	− 997.0	67.50	16 9.7	59 12.4	I. N.
21	7 36.22	2.020	11 36 48.51	131.40	+ 0 7 37.5	−1042.6	67.56	16 17.8	59 42.0	I. N.
22	8 25.36	2.085	12 30 1.69	135.30	− 6 49 5.3	−1030.6	68.54	16 23.8	60 4.2	I. N.
23	9 16.73	2.204	13 25 28.70	142.46	−13 28 2.0	− 952.2	70.33	16 26.9	60 15.7	I. N.
24	10 11.44	2.359	14 24 17.20	151.79	−19 21 2.2	− 800.1	72.63	16 26.4	60 13.6	I. N.
25	11 9.94	2.510	15 26 53.07	160.88	−23 58 11.3	− 574.3	74.83	16 21.8	59 56.6	I. S.
26	12 11.43	2.599	16 32 29.42	166.23	−26 52 55.2	− 292.7	76.11	16 13.3	59 25.6	II. S.
27	13 13.80	2.578	17 38 57.94	164.93	−27 49 47.6	+ 7.6	75.83	16 1.8	58 43.2	II. S.
28	14 14.25	2.445	18 43 31.79	156.93	−26 50 14.3	282.8	73.94	15 48.3	57 53.7	II. S.
29	15 10.61	2.246	19 43 59.20	144.99	−24 11 1.3	502.9	71.02	15 34.2	57 2.1	II. N.
30	16 1.99	2.038	20 39 27.07	132.49	−20 16 21.2	660.3	67.85	15 20.8	56 12.7	II. N.
31	16 48.69	1.860	21 30 13.16	121.78	−15 30 4.6	762.9	65.01	15 9.0	55 29.2	II. N.
June 1	17 31.67	1.730	22 17 15.43	113.94	−10 11 45.2	+ 822.7	62.86	14 59.5	54 54.3	II. N.
2	18 12.14	1.652	23 1 46.93	109.22	− 4 36 13.7	850.2	61.51	14 52.6	54 29.2	II. N.
3	18 51.36	1.625	23 45 2.97	107.62	+ 1 5 4.6	852.3	61.03	14 48.8	54 15.0	II. N.
4	19 30.54	1.648	0 28 16.76	109.02	6 42 28.7	830.7	61.40	14 47.8	54 11.4	II. N.
5	20 10.85	1.719	1 12 38.59	113.27	12 6 19.5	783.8	62.56	14 49.6	54 17.9	II. N.
6	20 53.39	1.833	1 59 14.54	120.13	+17 5 31.2	+ 706.4	64.42	14 53.8	54 33.4	II. N.
7	21 39.10	1.981	2 49 1.45	129.03	21 26 23.1	591.0	66.77	15 0.0	54 56.4	II. N.
8	22 28.59	2.143	3 42 35.32	138.78	24 52 19.8	430.9	69.28	15 7.8	55 24.9	II. N. S.
9	23 21.81	2.286	4 39 53.91	147.38	27 5 2.5	+ 225.4	71.44	15 16.5	55 57.0	II. S.
11	0 17.85	2.371	5 40 1.75	152.53	27 47 51.6	− 15.7	72.72	15 25.7	56 30.6	I. S.
12	1 14.98	2.375	6 41 15.59	152.77	+26 50 42.3	− 270.0	72.80	15 34.7	57 3.6	I. S.
13	2 11.27	2.306	7 41 39.01	148.57	24 13 52.1	− 509.6	71.80	15 43.2	57 34.9	I. N.
14	3 5.32	2.196	8 39 47.46	141.95	20 8 0.3	− 712.2	70.19	15 50.9	58 3.4	I. N.
15	3 56.66	2.086	9 35 13.00	135.37	14 50 39.9	− 865.9	68.54	15 57.8	58 28.4	I. N.
16	4 45.71	2.008	10 28 20.33	130.68	8 42 12.9	− 967.6	67.34	16 3.6	58 49.8	I. N.
17	5 33.45	1.979	11 20 9.14	128.94	+ 2 3 26.3	−1017.6	66.91	16 8.4	59 7.4	I. N.
18	6 21.18	2.008	12 11 57.63	130.69	− 4 44 54.9	−1015.2	67.38	16 11.9	59 20.5	I. N.
19	7 10.31	2.095	13 5 10.03	135.90	−11 21 15.7	− 956.8	68.73	16 14.0	59 28.1	I. N.
20	8 2.13	2.230	14 1 4.16	144.00	−17 22 4.9	− 836.6	70.77	16 14.2	59 28.9	I. N.
21	8 57.51	2.386	15 0 32.56	153.39	−22 21 39.2	− 650.3	73.07	16 12.2	59 21.5	I. N.
22	9 56.44	2.516	16 3 34.55	161.24	−25 54 10.0	− 403.4	74.93	16 7.7	59 5.1	I. N.
23	10 57.63	2.566	17 8 52.48	164.21	−27 39 8.6	− 118.0	75.60	16 0.7	58 39.3	I. S.
24	11 58.68	2.503	18 14 2.12	160.46	−27 28 28.1	+ 168.0	74.68	15 51.5	58 5.5	I. II. S.
25	12 57.03	2.348	19 16 29.58	151.10	−25 29 48.9	416.6	72.40	15 40.7	57 25.9	II. S.
26	13 51.03	2.150	20 14 35.09	139.21	−22 3 1.8	606.8	69.42	15 29.2	56 43.7	II. N.
27	14 40.29	1.959	21 7 54.99	127.71	−17 32 27.9	+ 736.5	66.45	15 17.9	56 2.0	II. N.
28	15 25.36	1.804	21 57 3.08	118.41	−12 20 42.6	814.7	63.98	15 7.6	55 24.2	II. N.
29	16 7.29	1.698	22 43 2.29	112.04	− 6 45 59.3	853.1	62.24	14 59.1	54 52.9	II. N.
30	16 47.28	1.643	23 27 5.24	108.73	− 1 2 14.7	861.0	61.34	14 52.9	54 30.3	II. N.
31	17 26.57	1.639	0 10 25.57	108.47	+ 4 39 33.9	+ 844.0	61.29	14 49.5	54 17.7	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
uly 1	17 26.57	1.639	0 10 25.57	108.47	+ 4 39 33.9	+ 844.0	61.29	14 49.5	54 17.7	II. N.
2	18 6.35	1.684	0 54 15.16	111.16	10 9 48.7	803.1	62.07	14 48.9	54 15.7	II. N.
3	18 47.76	1.775	1 39 43.49	116.66	15 18 35.2	735.9	63.61	14 51.4	54 24.7	II. N.
4	19 31.89	1.908	2 27 54.86	124.66	19 54 12.7	636.2	65.78	14 56.6	54 43.9	II. N.
5	20 19.58	2.069	3 19 40.68	134.34	23 42 11.7	496.4	68.30	15 4.4	55 12.4	II. N.
6	21 11.22	2.232	4 15 24.37	144.15	+26 25 12.9	+ 310.9	70.77	15 14.1	55 48.1	II. N.
7	22 6.43	2.359	5 14 42.30	151.77	27 45 4.5	+ 82.0	72.62	15 25.1	56 28.4	II. S.
8	23 3.86	2.413	6 16 14.19	155.02	27 27 2.6	− 174.8	73.38	15 36.5	57 10.3	II. S.
10	0 1.56	2.382	7 18 2.24	153.17	25 25 8.8	− 432.2	72.90	15 47.4	57 50.4	I. II. S.
11	0 57.69	2.288	8 18 15.83	147.52	21 45 5.6	− 661.2	71.50	15 57.0	58 25.5	I. N. S.
12	1 51.21	2.172	9 15 52.56	140.53	+16 42 47.5	− 841.0	69.76	16 4.6	58 53.6	I. N.
13	2 42.08	2.072	10 10 49.34	134.52	10 40 4.8	− 962.6	68.25	16 9.9	59 12.9	I. N.
14	3 31.00	2.013	11 3 49.20	130.97	+ 4 0 40.1	−1024.6	67.37	16 12.8	59 23.6	I. N.
15	4 19.13	2.007	11 56 1.64	130.64	− 2 52 0.6	−1029.2	67.34	16 13.5	59 26.3	I. N.
16	5 7.81	2.058	12 48 46.76	133.68	− 9 35 12.5	− 977.4	68.18	16 12.3	59 21.9	I. N.
17	5 58.33	2.159	13 43 22.70	139.76	−15 46 18.0	− 868.4	69.78	16 9.6	59 12.0	I. N.
18	6 51.70	2.292	14 40 50.53	147.75	−21 2 10.2	− 701.2	71.80	16 5.6	58 57.1	I. N.
19	7 48.31	2.421	15 41 32.91	155.52	−24 59 51.2	− 478.6	73.69	16 0.3	58 37.9	I. N.
20	8 47.50	2.499	16 44 50.73	160.19	−27 19 29.7	− 214.5	74.77	15 54.0	58 14.7	I. N.
21	9 47.53	2.486	17 48 58.48	159.43	−27 49 31.8	+ 63.8	74.52	15 46.7	57 47.7	I. S.
22	10 46.07	2.379	18 51 37.36	152.97	−26 31 5.8	+ 322.4	72.88	15 38.4	57 17.3	I. S.
23	11 41.22	2.211	19 50 52.10	142.88	−23 37 48.8	534.9	70.31	15 29.4	56 44.3	I. S.
24	12 32.09	2.029	20 45 49.33	131.92	−19 30 46.1	690.7	67.47	15 20.2	56 10.4	II. N. S.
25	13 18.78	1.868	21 36 34.60	122.22	−14 32 27.4	792.4	64.88	15 11.2	55 37.3	II. N.
26	14 2.05	1.746	22 23 54.63	114.89	− 9 2 54.2	848.5	62.90	15 2.9	55 7.1	II. N.
27	14 42.95	1.670	23 8 51.94	110.36	− 3 18 26.5	+ 868.3	61.67	14 56.0	54 41.6	II. N.
28	15 22.61	1.643	23 52 34.69	108.68	+ 2 27 54.6	858.9	61.25	14 51.0	54 23.2	II. N.
29	16 2.17	1.662	0 36 11.17	109.82	8 5 18.2	823.9	61.64	14 48.3	54 13.3	II. N.
30	16 42.73	1.726	1 20 48.26	113.71	13 23 43.1	763.8	62.80	14 48.3	54 13.2	II. N.
31	17 25.37	1.833	2 7 29.93	120.16	18 12 33.5	675.3	64.63	14 51.2	54 23.8	II. N.
ug. 1	18 11.02	1.975	2 57 12.83	128.69	+22 19 26.2	+ 552.8	66.96	14 57.0	54 45.4	II. N.
2	19 0.32	2.135	3 50 35.94	138.29	25 29 27.5	390.1	69.46	15 5.7	55 17.2	II. N.
3	19 53.38	2.279	4 47 44.68	146.99	27 25 44.6	+ 184.3	71.68	15 16.9	55 58.2	II. N.
4	20 49.47	2.381	5 47 55.41	153.09	27 51 57.3	− 58.2	73.10	15 29.8	56 45.8	II. S.
5	21 47.05	2.405	6 49 36.64	154.54	26 36 47.3	− 318.5	73.39	15 43.6	57 36.6	II. S.
6	22 44.30	2.355	7 50 57.45	151.56	+23 38 26.4	− 569.2	72.59	15 57.2	58 26.4	II. S.
7	23 39.76	2.262	8 50 30.64	145.95	19 6 17.2	− 783.5	71.15	16 9.2	59 10.4	II. S.
9	0 32.84	2.164	9 47 40.94	140.04	13 18 57.1	− 942.9	69.64	16 18.4	59 44.3	I. N.
10	1 23.83	2.092	10 42 45.46	135.72	+ 6 40 35.0	−1037.8	68.55	16 24.1	60 5.1	I. N.
11	2 13.63	2.066	11 36 37.68	134.14	− 0 22 25.4	−1066.0	68.17	16 25.9	60 11.7	I. N.
12	3 3.41	2.091	12 30 29.15	135.68	− 7 23 28.4	−1028.4	68.64	16 24.0	60 4.8	I. N.
13	3 54.41	2.166	13 25 34.12	140.17	−13 56 40.4	− 927.1	69.87	16 19.0	59 46.5	I. N.
14	4 47.65	2.275	14 22 54.10	146.71	−19 37 11.5	− 765.7	71.58	16 11.8	59 20.0	I. N.
15	5 43.63	2.388	15 22 58.70	153.51	−24 1 58.9	− 550.1	73.31	16 3.2	58 48.4	I. N.
16	6 41.97	2.464	16 25 25.17	158.09	−26 51 49.1	− 294.0	74.42	15 53.9	58 14.3	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bri Lin
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Aug. 16	6 41.97	2.464	16 25 25.17	158.09	−26 51 49.1	− 294.0	74.42	15 53.9	58 14.3	I.
17	7 41.29	2.465	17 28 50.62	158.15	−27 54 57.9	− 21.3	74.39	15 44.5	57 39.9	I.
18	8 39.59	2.380	18 31 14.75	153.05	−27 10 34.3	+ 238.7	73.07	15 35.3	57 5.8	I.
19	9 35.03	2.233	19 30 46.86	144.19	−24 49 1.8	461.1	70.77	15 26.4	56 33.2	I.
20	10 26.57	2.062	20 26 24.46	133.93	−21 8 22.6	633.3	68.05	15 17.9	56 2.1	I.
21	11 14.11	1.903	21 18 0.92	124.38	−16 29 17.6	+ 753.9	65.46	15 10.0	55 33.2	I.
22	11 58.19	1.777	22 6 9.72	116.76	−11 11 24.5	828.5	63.34	15 2.8	55 6.7	I. II.
23	12 39.73	1.691	22 51 45.11	111.62	− 5 31 42.7	864.2	61.91	14 56.5	54 43.4	II.
24	13 19.74	1.650	23 35 48.94	109.13	+ 0 15 32.6	867.1	61.22	14 51.3	54 24.4	II.
25	13 59.27	1.652	0 19 24.19	109.24	5 58 12.3	841.7	61.31	14 47.7	54 11.1	II.
26	14 39.36	1.696	1 3 32.63	111.88	+11 25 18.1	+ 789.4	62.13	14 46.0	54 4.7	II.
27	15 20.98	1.779	1 49 13.39	116.90	16 26 2.3	709.5	63.62	14 46.5	54 6.7	II.
28	16 5.03	1.897	2 37 20.14	123.97	20 48 49.1	598.9	65.63	14 49.6	54 18.1	II.
29	16 52.20	2.036	3 28 34.41	132.36	24 20 32.5	453.5	67.93	14 55.5	54 39.8	II.
30	17 42.78	2.177	4 23 14.24	140.83	26 46 33.5	270.3	70.17	15 4.3	55 12.1	II.
31	18 36.48	2.290	5 21 1.22	147.65	+27 51 54.5	+ 51.1	71.89	15 15.8	55 54.3	II.
Sept. 1	19 32.28	2.349	6 20 55.04	151.20	27 24 4.4	− 193.2	72.74	15 29.6	56 45.2	II.
2	20 28.72	2.344	7 21 27.13	150.86	25 16 36.2	− 443.3	72.59	15 45.0	57 41.7	II.
3	21 24.37	2.288	8 21 12.01	147.51	21 31 46.5	− 676.1	71.68	16 0.8	58 39.6	II.
4	22 18.38	2.213	9 19 18.23	142.98	16 20 55.4	− 870.2	70.46	16 15.5	59 33.5	II.
5	23 10.68	2.150	10 15 41.09	139.18	+10 2 56.7	−1009.4	69.45	16 27.5	60 17.7	II.
7	0 1.85	2.122	11 10 56.24	137.52	+ 3 2 8.5	−1082.9	69.00	16 35.5	60 47.0	I. II.
8	0 52.90	2.141	12 6 4.65	138.69	− 4 13 39.7	−1083.7	69.32	16 38.5	60 58.0	I.
9	1 45.02	2.209	13 2 16.48	142.75	−11 14 46.9	−1009.3	70.41	16 36.3	60 50.1	I.
10	2 39.22	2.312	14 0 33.99	148.96	−17 31 21.6	− 861.8	72.05	16 29.6	60 25.3	I.
11	3 36.07	2.423	15 1 30.79	155.64	−22 35 29.3	− 649.1	73.77	16 19.3	59 47.7	I.
12	4 35.27	2.501	16 4 49.14	160.31	−26 4 12.8	− 388.6	74.97	16 7.0	59 2.5	I.
13	5 35.50	2.504	17 9 9.86	160.53	−27 43 30.8	− 107.3	75.05	15 53.9	58 14.4	I.
14	6 34.77	2.420	18 12 32.10	155.48	−27 31 29.7	+ 162.9	73.80	15 41.1	57 27.1	I.
15	7 31.16	2.270	19 13 1.07	146.46	−25 38 13.8	395.7	71.50	15 29.2	56 43.4	I.
16	8 23.55	2.095	20 9 29.66	135.88	−22 21 38.8	+ 578.5	68.72	15 18.6	56 4.6	I.
17	9 11.78	1.929	21 1 48.14	125.91	−18 2 11.5	710.6	65.99	15 9.5	55 31.1	I.
18	9 56.39	1.795	21 50 28.73	117.87	−12 59 5.6	797.8	63.72	15 1.8	55 2.9	I.
19	10 38.28	1.702	22 36 25.23	112.28	− 7 28 59.9	846.7	62.08	14 55.5	54 39.8	I.
20	11 18.45	1.653	23 20 38.90	109.29	− 1 46 1.9	862.9	61.20	14 50.5	54 21.6	I.
21	11 57.94	1.645	0 4 11.43	108.84	+ 3 57 26.5	+ 849.7	61.06	14 46.9	54 8.3	I. II.
22	12 37.74	1.678	0 48 2.37	110.82	9 29 58.7	808.4	61.64	14 44.7	54 0.2	II.
23	13 18.77	1.747	1 33 7.67	114.99	14 40 16.6	738.3	62.88	14 44.1	53 58.0	II.
24	14 1.87	1.849	2 20 17.25	121.08	19 16 29.9	637.5	64.63	14 45.3	54 2.4	II.
25	14 47.68	1.971	3 10 9.93	128.45	23 5 52.1	503.6	66.70	14 48.6	54 14.4	II.
26	15 36.52	2.097	4 3 4.63	136.03	+25 54 44.9	+ 335.1	68.78	14 54.2	54 35.1	II.
27	16 28.20	2.204	4 58 50.47	142.46	27 29 34.9	+ 134.3	70.50	15 2.4	55 5.1	II.
28	17 21.96	2.268	5 56 41.75	146.30	27 38 51.0	− 90.9	71.52	15 13.2	55 44.6	II.
29	18 16.62	2.278	6 55 26.77	146.91	26 15 32.5	− 325.9	71.67	15 26.4	56 33.1	II.
30	19 10.94	2.242	7 53 51.35	144.77	+23 19 7.2	− 553.5	71.10	15 41.5	57 28.7	II.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
ct. 1	20 4.08	2.184	8 61 4.97	141.29	+18 55 56.3	− 757.2	70.15	15 57.8	58 28.5	II. S.
2	20 55.85	2.133	9 46 56.10	138.16	13 18 30.2	− 922.5	69.28	16 13.9	59 27.7	II. S.
3	21 46.68	2.110	10 41 51.25	136.82	+ 6 44 36.6	−1037.4	68.86	16 28.2	60 20.2	II. S.
4	22 37.50	2.133	11 36 45.30	138.19	− 0 23 4.8	−1089.5	69.16	16 39.0	61 0.1	II. S.
5	23 29.47	2.206	12 32 48.37	142.58	− 7 37 9.5	−1067.6	70.27	16 44.9	61 21.6	II. N.
7	0 23.75	2.323	13 31 10.49	149.62	−14 26 12.0	− 963.4	72.06	16 44.9	61 21.7	I. N.
8	1 21.14	2.460	14 32 40.00	157.84	−20 16 52.8	− 776.7	74.13	16 39.2	61 0.5	I. N.
9	2 21.61	2.571	15 37 14.96	164.54	−24 38 12.8	− 520.3	75.81	16 28.5	60 21.4	I. N.
10	3 23.93	2.605	16 43 40.68	166.60	−27 7 46.6	− 224.1	76.38	16 14.5	59 30.0	I. N.
11	4 25.82	2.534	17 49 40.53	162.32	−27 37 41.8	+ 70.9	75.41	15 58.9	58 32.8	I. N.
12	5 24.87	2.376	18 52 50.07	152.80	−26 16 8.5	+ 328.4	73.11	15 43.3	57 35.5	I. S.
13	6 19.54	2.178	19 51 36.09	140.89	−23 22 30.6	529.9	70.10	15 28.8	56 42.2	I. S.
14	7 9.48	1.987	20 45 36.81	129.40	−19 19 51.6	674.4	67.05	15 16.2	55 55.7	I. S.
15	7 55.20	1.831	21 35 24.47	119.99	−14 29 29.4	770.2	64.44	15 5.6	55 17.0	I. S.
16	8 37.71	1.720	22 21 58.43	113.32	− 9 8 56.4	826.7	62.50	14 57.4	54 46.6	I. S.
17	9 18.13	1.656	23 6 26.58	109.50	− 3 32 19.1	+ 851.4	61.34	14 51.2	54 24.0	I. S.
18	9 57.57	1.638	23 49 56.04	108.41	+ 2 8 30.2	848.1	60.96	14 47.0	54 8.6	I. S.
19	10 37.09	1.662	0 33 30.27	109.86	7 42 37.7	818.0	61.33	14 44.6	53 59.6	I. S.
20	11 17.66	1.725	1 18 7.76	113.63	12 59 5.4	759.5	62.37	14 43.8	53 56.7	I. N.
21	12 0.14	1.820	2 4 40.15	119.36	17 46 4.5	670.0	63.97	14 44.4	53 59.1	II. N.
22	12 45.19	1.937	2 53 47.41	126.40	+21 50 35.5	+ 546.7	65.91	14 46.6	54 7.1	II. N.
23	13 33.16	2.059	3 45 49.69	133.72	24 58 42.5	388.1	67.92	14 50.4	54 21.0	II. N.
24	14 23.87	2.163	4 40 37.50	140.00	26 56 41.9	+ 197.0	69.60	14 55.9	54 41.1	II. N.
25	15 16.60	2.224	5 37 26.54	143.65	27 33 6.0	− 17.9	70.62	15 3.2	55 8.0	II. N.
26	16 10.18	2.232	6 35 6.25	144.13	26 41 8.6	− 242.1	70.81	15 12.5	55 42.4	II. S.
27	17 3.35	2.193	7 32 21.78	141.79	+24 20 17.3	− 459.7	70.27	15 23.9	56 24.2	II. S.
28	17 55.24	2.130	8 28 20.42	137.99	20 36 8.1	− 656.6	69.30	15 37.1	57 12.6	II. S.
29	18 45.60	2.070	9 22 46.98	134.39	15 39 2.1	− 823.0	68.35	15 51.6	58 6.0	II. S.
30	19 34.82	2.037	10 16 4.42	132.44	9 42 45.0	− 951.4	67.79	16 6.7	59 1.3	II. S.
31	20 23.76	2.049	11 9 5.49	133.16	+ 3 4 5.5	−1033.4	67.92	16 21.0	59 54.0	II. S.
Nov. 1	21 13.62	2.116	12 3 2.25	137.14	− 3 56 18.5	−1057.9	68.89	16 33.1	60 38.4	II. S.
2	22 5.75	2.237	12 59 14.81	144.43	−10 52 50.9	−1011.7	70.71	16 41.4	61 8.7	II. S.
3	23 1.32	2.399	13 58 55.10	154.20	−17 14 31.9	− 882.1	73.12	16 44.5	61 20.0	II. N.
5	0 0.95	2.566	15 2 39.11	164.23	−22 26 54.0	− 665.9	75.55	16 41.7	61 9.8	I. N.
6	1 4.03	2.675	16 9 50.58	170.82	−25 57 46.6	− 379.4	77.15	16 33.3	60 39.0	I. N.
7	2 8.44	2.671	17 18 22.71	170.54	−27 26 26.1	− 63.2	77.14	16 20.5	59 52.0	I. N.
8	3 11.21	2.542	18 25 15.63	162.78	−26 51 5.2	+ 232.6	75.36	16 4.9	58 54.8	I. N. S.
9	4 9.82	2.334	19 27 57.98	150.30	−24 28 7.1	471.1	72.36	15 48.4	57 54.0	I. S.
10	5 3.14	2.111	20 25 22.74	136.89	−20 43 19.9	641.8	68.99	15 32.4	56 55.5	I. S.
11	5 51.40	1.917	21 17 42.96	125.22	−16 2 40.1	752.5	65.91	15 18.2	56 3.1	I. S.
12	6 35.58	1.773	22 5 57.44	116.51	−10 47 29.8	+ 816.6	63.49	15 6.2	55 19.2	I. S.
13	7 16.92	1.681	22 51 21.34	111.02	− 5 13 59.9	845.8	61.90	14 57.0	54 45.2	I. S.
14	7 56.69	1.641	23 35 10.83	108.61	+ 0 25 26.3	847.1	61.15	14 50.4	54 21.0	I. S.
15	8 36.09	1.649	0 18 37.66	109.08	6 0 26.5	823.7	61.22	14 46.4	54 6.4	I. S.
16	9 16.21	1.701	1 2 47.87	112.18	+11 21 3.9	+ 774.9	62.04	14 44.8	54 0.3	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Nov. 17	9 58.03	1.790	1 48 40.54	117.55	+16 16 31.8	+ 697.3	63.48	14 45.2	54 1.8	I. S.
18	10 42.36	1.907	2 37 3.97	124.61	20 34 28.5	586.5	65.37	14 47.3	54 9.7	I. N. S.
19	11 29.68	2.036	3 28 27.54	132.35	24 0 51.8	439.1	67.41	14 50.9	54 23.0	I. N.
20	12 19.98	2.151	4 22 50.47	139.28	26 20 59.5	255.8	69.22	14 55.8	54 40.9	II. N.
21	13 12.60	2.225	5 19 33.10	143.74	27 21 47.0	+ 44.5	70.40	15 1.9	55 3.1	II. N.
22	14 6.31	2.240	6 17 21.11	144.63	+26 54 50.8	− 179.7	70.69	15 8.9	55 29.2	II. N.
23	14 59.67	2.198	7 14 47.85	142.10	24 58 49.1	− 397.9	70.12	15 17.2	55 59.3	II. S.
24	15 51.54	2.121	8 10 45.17	137.47	21 39 32.9	− 593.6	68.99	15 26.4	56 33.4	II. S.
25	16 41.45	2.039	9 4 44.33	132.56	17 8 11.5	− 757.1	67.76	15 36.8	57 11.4	II. S.
26	17 29.62	1.980	9 56 58.94	128.99	11 38 46.4	− 883.4	66.84	15 48.0	57 52.7	II. S.
27	18 16.83	1.962	10 48 16.08	127.93	+ 5 26 45.7	− 969.6	66.56	15 59.8	58 35.9	II. S.
28	19 4.24	1.998	11 39 45.21	130.08	− 1 10 55.2	−1010.7	67.11	16 11.3	59 18.3	II. S.
29	19 53.22	2.093	12 32 48.57	135.80	− 7 54 41.8	− 998.2	68.57	16 21.7	59 56.4	II. S.
30	20 45.18	2.245	13 28 50.90	144.90	−14 20 41.6	919.5	70.84	16 29.7	60 25.8	II. S.
Dec. 1	21 41.25	2.432	14 29 1.24	156.15	−19 59 52.3	− 762.4	73.59	16 34.1	60 42.0	II. S.
2	22 41.80	2.607	15 33 40.69	166.70	−24 19 45.2	− 524.1	76.09	16 33.9	60 41.3	II. N. S.
3	23 45.74	2.702	16 41 44.21	172.44	−26 50 49.4	− 224.0	77.42	16 28.8	60 22.6	I. II. N.
5	0 50.44	2.665	17 50 33.11	170.22	−27 16 39.8	+ 93.0	76.92	16 19.2	59 47.2	I. N.
6	1 52.68	2.505	18 56 54.33	160.56	−25 41 10.5	374.9	74.66	16 6.1	58 59.1	I. N. S.
7	2 50.16	2.281	19 58 29.41	147.09	−22 25 45.4	589.7	71.40	15 51.2	58 4.2	I. S.
8	3 42.19	2.058	20 54 35.82	133.70	−17 59 1.6	+ 732.5	68.03	15 35.8	57 7.9	I. S.
9	4 29.29	1.876	21 45 46.58	122.71	−12 47 40.7	815.3	65.14	15 21.4	56 14.9	I. S.
10	5 12.65	1.747	22 33 11.68	114.96	− 7 12 42.1	853.2	63.03	15 8.9	55 29.0	I. S.
11	5 53.59	1.674	23 18 11.38	110.57	− 1 29 29.8	858.1	61.79	14 58.9	54 52.4	I. S.
12	6 33.42	1.654	0 2 4.12	109.34	+ 4 10 22.8	837.3	61.43	14 51.9	54 26.5	I. S.
13	7 13.35	1.682	0 46 3.13	111.04	+ 9 37 13.7	+ 793.0	61.88	14 47.7	54 11.3	I. S.
14	7 54.50	1.754	1 31 15.46	115.39	14 41 28.2	723.7	63.06	14 46.5	54 6.7	I. S.
15	8 37.84	1.863	2 18 39.76	121.94	19 12 19.0	625.2	64.80	14 47.8	54 11.6	I. S.
16	9 24.11	1.995	3 8 59.85	129.86	22 56 58.9	492.0	66.86	14 51.4	54 24.9	I. S.
17	10 13.59	2.127	4 2 33.65	137.81	25 40 53.7	321.3	68.88	14 56.9	54 44.8	I. N. S.
18	11 5.95	2.229	4 59 0.22	143.95	+27 9 25.4	+ 116.3	70.41	15 3.6	55 9.6	I. N.
19	12 0.11	2.273	5 57 15.27	146.64	27 11 1.7	− 110.4	71.08	15 11.3	55 37.7	I. II. N.
20	12 54.53	2.251	6 55 46.11	145.29	25 40 52.0	− 338.9	70.75	15 19.4	56 7.4	II. N.
21	13 47.74	2.177	7 53 3.99	140.81	22 42 36.9	− 547.7	69.66	15 27.6	56 37.6	II. S.
22	14 38.85	2.081	8 48 15.15	135.07	18 27 22.2	− 721.8	68.23	15 35.7	57 7.5	II. S.
23	15 27.72	1.996	9 41 12.46	129.95	+13 10 44.5	− 853.9	66.95	15 43.7	57 36.9	II. S.
24	16 14.93	1.945	10 32 29.09	126.87	7 10 6.4	− 941.8	66.18	15 51.5	58 5.4	II. S.
25	17 1.47	1.942	11 23 5.56	126.72	+ 0 43 16.6	− 984.7	66.18	15 59.0	58 32.9	II. S.
26	17 48.61	1.996	12 14 18.37	129.94	− 5 51 21.0	− 980.0	67.07	16 6.0	58 58.6	II. S.
27	18 37.74	2.107	13 7 30.69	136.64	−12 13 39.6	− 921.8	68.83	16 12.1	59 21.0	II. S.
28	19 30.15	2.267	14 4 0.86	146.26	−18 0 27.7	− 800.9	71.25	16 16.8	59 38.3	II. S.
29	20 26.73	2.447	15 4 41.48	157.10	−22 45 2.9	− 610.0	73.89	16 19.3	59 47.7	II. S.
30	21 27.38	2.595	16 9 26.69	166.01	−25 59 32.3	− 352.6	75.97	16 19.1	59 47.0	II. S.
31	22 30.55	2.649	17 16 44.19	169.24	−27 21 24.2	− 53.0	76.67	16 15.6	59 34.0	II. N.
32	23 33.51	2.577	18 23 48.72	164.90	−26 42 7.3	+ 245.1	75.61	16 8.8	59 9.0	II. N.

FOR TRANSIT AT WASHINGTON.

ate.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
an. 0	0 32.4	19 11 57.15	24 31 51.4	6.4	2.4	0.18	Feb. 14	23 15.2	20 55 58.94	−13 57 0.6	13.2	5.0	0.34
1	0 35.6	19 19 5.56	24 20 31.6	6.4	2.4	0.18	15	23 9.0	20 53 40.86	14 17 1.2	13.0	4.9	0.33
2	0 38.8	19 26 13.49	24 7 37.0	6.5	2.4	0.18	16	23 3.3	20 51 53.49	14 35 48.5	12.8	4.8	0.33
3	0 41.9	19 33 20.63	23 53 7.7	6.5	2.4	0.18	17	22 58.0	20 50 36.89	14 53 12.4	12.6	4.8	0.33
4	0 45.1	19 40 26.67	23 37 3.5	6.6	2.5	0.18	18	22 53.3	20 49 50.57	15 9 5.9	12.4	4.7	0.32
5	0 48.2	19 47 31.28	−23 19 24.0	6.6	2.5	0.18	19	22 49.1	20 49 33.60	−15 23 24.0	12.2	4.6	0.32
6	0 51.3	19 54 34.07	23 0 9.7	6.7	2.5	0.18	20	22 45.4	20 49 44.73	15 36 3.8	12.0	4.5	0.31
7	0 54.3	20 1 34.58	22 39 21.2	6.7	2.6	0.18	21	22 42.1	20 50 22.58	15 47 3.0	11.8	4.4	0.31
8	0 57.3	20 8 32.33	22 16 59.3	6.8	2.6	0.18	22	22 39.2	20 51 25.57	15 56 20.7	11.6	4.4	0.30
9	1 0.3	20 15 26.76	21 53 5.6	6.9	2.6	0.19	23	22 36.8	20 52 52.07	16 3 56.9	11.4	4.3	0.30
10	1 3.2	20 22 17.25	−21 27 41.9	7.0	2.7	0.19	24	22 34.7	20 54 40.50	−16 9 51.7	11.1	4.2	0.29
11	1 6.0	20 29 3.09	21 0 50.6	7.1	2.7	0.19	25	22 32.9	20 56 49.30	16 14 6.1	10.9	4.1	0.29
12	1 8.8	20 35 43.48	20 32 35.1	7.2	2.7	0.19	26	22 31.4	20 59 16.97	16 16 41.1	10.7	4.0	0.28
13	1 11.4	20 42 17.49	20 2 59.4	7.4	2.8	0.19	27	22 30.2	21 2 2.04	16 17 37.6	10.5	4.0	0.28
14	1 13.8	20 48 44.12	19 32 8.2	7.5	2.8	0.20	28	22 29.2	21 5 3.18	16 16 56.9	10.3	3.9	0.27
15	1 16.2	20 55 2.17	−19 0 7.7	7.6	2.9	0.20	29	22 28.5	21 8 19.10	−16 14 40.1	10.1	3.8	0.27
16	1 18.4	21 1 10.32	18 27 5.4	7.7	2.9	0.20	Mar. 1	22 28.1	21 11 48.63	16 10 48.6	9.9	3.7	0.26
17	1 20.4	21 7 7.06	17 53 10.2	7.9	3.0	0.21	2	22 27.9	21 15 30.72	16 5 23.7	9.8	3.7	0.26
18	1 22.2	21 12 50.73	17 18 32.2	8.0	3.0	0.21	3	22 27.9	21 19 24.34	15 58 26.4	9.6	3.6	0.25
19	1 23.7	21 18 19.43	16 43 23.9	8.2	3.1	0.21	4	22 28.0	21 23 28.57	15 49 58.1	9.4	3.6	0.25
20	1 25.0	21 23 31.09	−16 7 59.2	8.4	3.1	0.22	5	22 28.3	21 27 42.58	−15 40 0.0	9.3	3.5	0.24
21	1 25.9	21 28 23.44	15 32 34.3	8.6	3.2	0.22	6	22 28.7	21 32 5.60	15 28 33.4	9.1	3.5	0.24
22	1 26.4	21 32 53.98	14 57 27.6	8.9	3.3	0.23	7	22 29.3	21 36 36.92	15 15 39.3	9.0	3.4	0.23
23	1 26.6	21 37 0.05	14 22 59.6	9.1	3.4	0.23	8	22 30.0	21 41 15.93	15 1 18.7	8.8	3.4	0.23
24	1 26.3	21 40 38.91	13 49 32.4	9.4	3.5	0.24	9	22 30.8	21 46 2.06	14 45 32.9	8.7	3.3	0.22
25	1 25.5	21 43 47.66	−13 17 30.3	9.6	3.6	0.24	10	22 31.7	21 50 54.77	−14 28 22.7	8.6	3.3	0.22
26	1 24.2	21 46 23.51	12 47 18.6	9.9	3.7	0.25	11	22 32.7	21 55 53.60	14 9 49.1	8.5	3.2	0.22
27	1 22.3	21 48 23.78	12 19 23.6	10.2	3.8	0.26	12	22 33.9	22 0 58.14	13 49 53.2	8.4	3.2	0.22
28	1 19.7	21 49 46.02	11 54 11.8	10.5	3.9	0.26	13	22 35.2	22 6 8.04	13 28 36.0	8.3	3.2	0.21
29	1 16.5	21 50 28.14	11 32 8.4	10.9	4.1	0.27	14	22 36.5	22 11 22.93	13 5 58.3	8.2	3.1	0.21
30	1 12.5	21 50 28.74	−11 13 36.5	11.2	4.2	0.28	15	22 37.8	22 16 42.55	−12 42 0.9	8.1	3.1	0.21
31	1 7.9	21 49 47.11	10 58 56.6	11.5	4.3	0.29	16	22 39.2	22 22 6.64	12 16 44.9	8.0	3.1	0.21
eb. 1	1 2.6	21 48 23.50	10 48 24.5	11.8	4.4	0.30	17	22 40.7	22 27 34.98	11 50 11.0	7.9	3.0	0.21
2	0 56.6	21 46 19.19	10 42 10.3	12.1	4.5	0.31	18	22 42.4	22 33 7.39	11 22 20.1	7.8	3.0	0.20
3	0 49.9	21 43 36.70	10 40 17.3	12.4	4.7	0.31	19	22 44.1	22 38 43.69	10 53 12.9	7.7	2.9	0.20
4	0 42.7	21 40 19.87	−10 42 41.6	12.7	4.8	0.32	20	22 45.8	22 44 23.77	−10 22 50.2	7.7	2.9	0.20
5	0 35.0	21 36 33.61	10 49 11.4	13.0	4.9	0.33	21	22 47.6	22 50 7.55	9 51 12.9	7.6	2.9	0.20
6	0 27.0	21 32 23.88	10 59 28.0	13.2	5.0	0.33	22	22 49.4	22 55 54.93	9 18 21.8	7.5	2.9	0.20
7	0 18.6	21 27 57.43	11 13 5.0	13.4	5.0	0.34	23	22 51.3	23 1 45.89	8 44 17.6	7.5	2.8	0.19
8	0 10.1	21 23 21.54	11 29 32.0	13.5	5.1	0.34	24	22 53.2	23 7 40.40	8 9 1.0	7.4	2.8	0.19
9	0 1.6	21 18 43.58	−11 48 15.4	13.6	5.1	0.35	25	22 55.2	23 13 38.47	− 7 32 32.9	7.3	2.8	0.19
9	23 53.1	21 14 10.65	12 8 39.2	13.7	5.2	0.35	26	22 57.3	23 19 40.10	6 54 54.1	7.2	2.8	0.19
10	23 44.8	21 9 49.31	12 30 8.6	13.6	5.2	0.35	27	22 59.5	23 25 45.34	6 16 5.5	7.2	2.7	0.19
11	23 36.8	21 5 45.25	12 52 10.6	13.6	5.1	0.35	28	23 1.7	23 31 54.26	5 36 8.0	7.1	2.7	0.18
12	23 29.2	21 2 3.24	13 14 16.3	13.5	5.1	0.34	29	23 4.0	23 38 6.95	4 55 2.5	7.0	2.7	0.18
13	23 22.0	20 58 46.94	−13 35 59.9	13.4	5.0	0.34	30	23 6.3	23 44 23.50	− 4 12 50.0	7.0	2.6	0.18
14	23 15.2	20 55 58.94	−13 57 0.6	13.2	5.0	0.34	31	23 8.7	23 50 44.04	− 3 29 31.8	7.0	2.6	0.18

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	23 11.2	23 57 8.68	− 2 45 9.2	6.9	2.6	0.18	May 18	1 28.6	5 16 24.77	+25 10 12.9	11.2	4.2	0.31
2	23 13.7	0 3 37.58	1 59 43.5	6.9	2.6	0.17	19	1 28.2	5 19 52.48	25 6 39.2	11.5	4.3	0.32
3	23 16.3	0 10 10.91	1 13 16.3	6.8	2.6	0.17	20	1 27.4	5 23 0.75	25 1 35.1	11.8	4.4	0.32
4	23 19.0	0 16 48.82	− 0 25 49.3	6.8	2.6	0.17	21	1 26.2	5 25 49.24	24 55 5.1	12.1	4.5	0.33
5	23 21.7	0 23 31.49	+ 0 22 35.3	6.8	2.6	0.17	22	1 24.8	5 28 17.66	24 47 13.4	12.4	4.6	0.34
6	23 24.5	0 30 19.12	+ 1 11 55.2	6.8	2.6	0.17	23	1 23.0	5 30 25.72	+24 38 4.5	12.6	4.8	0.34
7	23 27.4	0 37 11.88	2 2 7.8	6.7	2.5	0.17	24	1 20.8	5 32 13.27	24 27 42.3	12.9	4.9	0.35
8	23 30.5	0 44 9.95	2 53 10.1	6.7	2.5	0.17	25	1 18.3	5 33 40.19	24 16 11.2	13.2	5.0	0.36
9	23 33.6	0 51 13.49	3 44 58.5	6.7	2.5	0.17	26	1 15.5	5 34 46.43	24 3 35.8	13.5	5.1	0.37
10	23 36.8	0 58 22.65	4 37 28.9	6.7	2.5	0.17	27	1 12.3	5 35 32.10	23 50 0.5	13.8	5.2	0.38
11	23 40.1	1 5 37.59	+ 5 30 36.2	6.7	2.5	0.17	28	1 8.8	5 35 57.49	+23 35 29.6	14.0	5.3	0.38
12	23 43.5	1 12 58.37	6 24 15.8	6.6	2.5	0.17	29	1 5.0	5 36 2.91	23 20 7.8	14.3	5.4	0.39
13	23 47.0	1 20 25.04	7 18 21.3	6.6	2.5	0.17	30	1 0.8	5 35 48.90	23 4 0.4	14.6	5.5	0.40
14	23 50.6	1 27 57.59	8 12 45.8	6.6	2.5	0.17	31	0 56.3	5 35 16.20	22 47 13.1	14.9	5.6	0.40
15	23 54.3	1 35 35.96	9 7 21.5	6.6	2.5	0.17	June 1	0 51.5	5 34 25.72	22 29 51.5	15.1	5.7	0.41
16	23 58.1	1 43 19.98	+10 1 59.6	6.6	2.5	0.17	2	0 46.5	5 33 18.56	+22 12 2.4	15.3	5.7	0.41
18	0 1.9	1 51 9.40	10 56 30.7	6.7	2.5	0.17	3	0 41.2	5 31 56.05	21 53 52.7	15.5	5.8	0.42
19	0 5.8	1 59 3.85	11 50 44.4	6.7	2.5	0.17	4	0 35.7	5 30 19.71	21 35 30.2	15.6	5.9	0.42
20	0 9.9	2 7 2.85	12 44 29.4	6.7	2.5	0.17	5	0 30.0	5 28 31.26	21 17 3.4	15.7	5.9	0.42
21	0 14.0	2 15 5.81	13 37 33.2	6.7	2.5	0.17	6	0 24.0	5 26 32.60	20 58 41.0	15.8	5.9	0.42
22	0 18.2	2 23 11.99	+14 29 44.0	6.8	2.5	0.18	7	0 18.0	5 24 25.75	+20 40 32.2	15.9	6.0	0.43
23	0 22.3	2 31 20.55	15 20 48.9	6.8	2.6	0.18	8	0 11.9	5 22 12.93	20 22 47.0	16.0	6.0	0.43
24	0 26.5	2 39 30.49	16 10 34.9	6.9	2.6	0.18	9	0 5.7	5 19 56.40	20 5 35.2	16.0	6.0	0.43
25	0 30.8	2 47 40.78	16 58 49.9	7.0	2.6	0.18	9	23 59.5	5 17 38.47	19 49 7.1	15.9	6.0	0.43
26	0 35.0	2 55 50.27	17 45 21.7	7.1	2.6	0.19	10	23 53.3	5 15 21.44	19 33 32.8	15.9	6.0	0.43
27	0 39.2	3 3 57.76	+18 29 59.3	7.2	2.7	0.19	11	23 47.1	5 13 7.62	+19 19 1.3	15.8	6.0	0.42
28	0 43.3	3 12 2.01	19 12 32.8	7.3	2.7	0.19	12	23 41.0	5 10 59.27	19 5 41.6	15.8	5.9	0.42
29	0 47.3	3 20 1.76	19 52 54.0	7.4	2.8	0.20	13	23 35.0	5 8 58.45	18 53 42.1	15.7	5.9	0.42
30	0 51.2	3 27 55.82	20 30 56.0	7.5	2.8	0.20	14	23 29.3	5 7 7.13	18 43 9.7	15.5	5.8	0.41
May 1	0 55.1	3 35 43.02	21 6 33.4	7.6	2.9	0.20	15	23 23.7	5 5 27.12	18 34 10.6	15.3	5.8	0.41
2	0 58.8	3 43 22.21	+21 39 41.9	7.8	2.9	0.21	16	23 18.3	5 4 0.05	+18 26 49.3	15.1	5.7	0.40
3	1 2.3	3 50 52.33	22 10 19.4	7.9	3.0	0.21	17	23 13.2	5 2 47.32	18 21 9.6	14.9	5.6	0.40
4	1 5.7	3 58 12.38	22 38 25.0	8.1	3.1	0.22	18	23 8.3	5 1 50.18	18 17 14.0	14.6	5.5	0.39
5	1 8.9	4 5 21.44	23 3 58.9	8.3	3.2	0 22	19	23 3.7	5 1 9.74	18 15 2.9	14.3	5.4	0.38
6	1 11.9	4 12 18.68	23 27 2.5	8.5	3.2	0.23	20	22 59.4	5 0 46.83	18 14 36.2	14.1	5.3	0.38
7	1 14.7	4 19 3.31	+23 47 38.0	8.6	3.3	0.23	21	22 55.4	5 0 42.17	+18 15 52.2	13.8	5.2	0.37
8	1 17.3	4 25 34.61	24 5 48.5	8.8	3.4	0.24	22	22 51.7	5 0 56.33	18 18 48.	13.5	5.1	0.36
9	1 19.6	4 31 51.91	24 21 37.4	9.0	3.4	0.24	23	22 48.3	5 1 29.75	18 23 21.	13.2	5.0	0.35
10	1 21.7	4 37 54.57	24 35 8.9	9.2	3.5	0.25	24	22 45.2	5 2 22.74	18 29 28.	12.9	4.9	0.34
11	1 23.6	4 43 42.03	24 46 27.5	9.4	3.6	0.26	25	22 42.5	5 3 35.55	18 37 1.5	12.6	4.8	0.33
12	1 25.2	4 49 13.73	+24 55 37.6	9.7	3.7	0.27	26	22 40.1	5 5 8.32	+18 45 56.6	12.3	4.6	0.33
13	1 26.5	4 54 29.12	25 2 44.2	9.9	3.7	0.27	27	22 38.1	5 7 1.12	18 56 6.9	12.0	4.5	0.32
14	1 27.5	4 59 27.72	25 7 52.2	10.2	3.8	0.28	28	22 36.3	5 9 14.02	19 7 25.6	11.7	4.4	0.31
15	1 28.2	5 4 9.04	25 11 6.1	10.4	3.9	0.29	29	22 34.9	5 11 47.03	19 19 45.4	11.4	4.3	0.31
16	1 28.7	5 8 32.62	25 12 31.0	10.7	4.0	0.30	30	22 33.9	5 14 40.11	19 32 58.4	11.2	4.2	0.30
17	1 28.8	5 12 38.00	+25 12 11.7	11.0	4.1	0.30	31	22 33.2	5 17 53.24	+19 46 56.4	10.9	4.1	0.29
18	1 28.6	5 16 24.77	+25 10 12.9	11.2	4.2	0.31	32	22 32.8	5 21 26.38	+20 1 31.0	10.6	4.0	0.29

FOR TRANSIT AT WASHINGTON.

ate.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
uly 1	22 33.2	5 17 53.24	+19 46 56.4	10.9	4.1	0.29	Aug. 17	1 5.7	10 52 7.24	+ 8 15 22.2	6.9	2.6	0.17
2	22 32.8	5 21 26.38	20 1 31.0	10.6	4.0	0.29	18	1 7.8	10 58 14.11	7 30 48.1	6.9	2.6	0.17
3	22 32.7	5 25 19.46	20 16 33.2	10.4	3.9	0.28	19	1 9.8	11 4 14.14	6 46 15.2	7.0	2.6	0.17
4	22 33.0	5 29 32.43	20 31 53.7	10.2	3.8	0.27	20	1 11.8	11 10 7.53	6 1 46.9	7.0	2.6	0.17
5	22 33.6	5 34 5.21	20 47 22.7	9.9	3.7	0.27	21	1 13.7	11 15 54.49	5 17 26.1	7.1	2.7	0.18
6	22 34.5	5 38 57.68	+21 2 50.2	9.7	3.7	0.26	22	1 15.4	11 21 35.25	+ 4 33 15.7	7.1	2.7	0.18
7	22 35.8	5 44 9.74	21 18 5.8	9.4	3.6	0.26	23	1 17.0	11 27 9.95	3 49 18.2	7.2	2.7	0.18
8	22 37.4	5 49 41.27	21 32 58.7	9.2	3.5	0.25	24	1 18.5	11 32 38.76	3 5 36.1	7.3	2.7	0.18
9	22 39.3	5 55 32.08	21 47 17.8	9.0	3.4	0.24	25	1 19.9	11 38 1.82	2 22 12.0	7.3	2.7	0.18
10	22 41.5	6 1 41.91	22 0 51.2	8.8	3.3	0.24	26	1 21.3	11 43 19.26	1 39 8.2	7.4	2.8	0.19
11	22 44.1	6 8 10.40	+22 13 26.9	8.6	3.3	0.23	27	1 22.6	11 48 31.18	+ 0 56 26.9	7.5	2.8	0.19
12	22 46.9	6 14 57.13	22 24 53.0	8.4	3.2	0.23	28	1 23.7	11 53 37.67	+ 0 14 10.4	7.6	2.8	0.19
13	22 50.0	6 22 1.58	22 34 57.5	8.2	3.1	0.22	29	1 24.8	11 58 38.77	− 0 27 38.8	7.6	2.8	0.19
14	22 53.3	6 29 23.03	22 43 28.1	8.0	3.0	0.22	30	1 25.8	12 3 34.53	1 8 58.7	7.7	2.9	0.19
15	22 57.0	6 37 0.61	22 50 12.8	7.9	3.0	0.21	31	1 26.7	12 8 24.93	1 49 46.8	7.7	2.9	0.20
16	23 1.0	6 44 53.33	+22 55 0.0	7.7	2.9	0.21	Sept. 1	1 27.5	12 13 9.97	− 2 30 0.9	7.8	3.0	0.20
17	23 5.2	6 53 0.03	22 57 38.6	7.5	2.9	0.20	2	1 28.2	12 17 49.60	3 9 38.7	7.9	3.0	0.20
18	23 9.6	7 1 19.33	22 57 59.3	7.4	2.8	0.20	3	1 28.8	12 22 23.73	3 48 37.6	8.0	3.0	0.20
19	23 14.1	7 9 49.72	22 55 53.8	7.3	2.8	0.20	4	1 29.4	12 26 52.25	4 26 55.0	8.1	3.1	0.20
20	23 18.8	7 18 29.51	22 51 14.8	7.2	2.7	0.20	5	1 29.8	12 31 14.99	5 4 27.9	8.2	3.1	0.21
21	23 23.6	7 27 16.92	+22 43 57.2	7.1	2.7	0.19	6	1 30.2	12 35 31.76	− 5 41 13.8	8.3	3.2	0.21
22	23 28.6	7 36 10.12	22 33 57.9	7.0	2.7	0.19	7	1 30.4	12 39 42.33	6 17 9.6	8.4	3.2	0.21
23	23 33.6	7 45 7.24	22 21 15.6	6.9	2.6	0.19	8	1 30.5	12 43 46.42	6 52 12.0	8.5	3.2	0.21
24	23 38.6	7 54 6.41	22 5 51.3	6.9	2.6	0.19	9	1 30.5	12 47 43.69	7 26 17.4	8.7	3.3	0.22
25	23 43.6	8 3 5.83	21 47 47.7	6.8	2.6	0.19	10	1 30.4	12 51 33.77	7 59 21.9	8.8	3.3	0.22
26	23 48.6	8 12 3.81	+21 27 9.3	6.8	2.6	0.18	11	1 30.1	12 55 16.21	− 8 31 21.5	9.0	3.4	0.23
27	23 53.5	8 20 58.81	21 4 2.0	6.7	2.5	0.18	12	1 29.8	12 58 50.49	9 2 11.6	9.1	3.4	0.23
28	23 58.4	8 29 49.47	20 38 33.4	6.7	2.5	0.18	13	1 29.3	13 2 16.05	9 31 47.3	9.3	3.5	0.23
30	0 3.2	8 38 34.54	20 10 51.4	6.7	2.5	0.18	14	1 28.7	13 5 32.24	10 0 3.3	9.4	3.6	0.24
31	0 7.9	8 47 13.05	19 41 5.0	6.7	2.5	0.18	15	1 27.8	13 8 38.32	10 26 53.7	9.6	3.6	0.24
ug. 1	0 12.5	8 55 44.14	+19 9 23.5	6.6	2.5	0.17	16	1 26.8	13 11 33.51	−10 52 12.1	9.7	3.7	0.25
2	0 16.9	9 4 7.16	18 35 56.5	6.6	2.5	0.17	17	1 25.5	13 14 16.91	11 15 51.2	9.9	3.8	0.25
3	0 21.2	9 12 21.61	18 0 53.2	6.6	2.5	0.17	18	1 24.1	13 16 47.52	11 37 43.2	10.1	3.8	0.26
4	0 25.4	9 20 27.14	17 24 22.8	6.6	2.5	0.17	19	1 22.4	13 19 4.30	11 57 39.3	10.2	3.9	0.26
5	0 29.3	9 28 23.49	16 46 34.4	6.6	2.5	0.17	20	1 20.5	13 21 6.09	12 15 30.2	10.4	4.0	0.27
6	0 33.1	9 36 10.60	+16 7 36.4	6.6	2.5	0.17	21	1 18.4	13 22 51.62	−12 31 5.3	10.6	4.0	0.27
7	0 36.9	9 43 48.43	15 27 37.0	6.6	2.5	0.17	22	1 15.9	13 24 19.59	12 44 13.1	10.8	4.1	0.28
8	0 40.3	9 51 17.01	14 46 43.9	6.6	2.5	0.17	23	1 13.1	13 25 28.62	12 54 41.2	11.0	4.2	0.28
9	0 43.7	9 58 36.44	14 5 3.9	6.6	2.5	0.17	24	1 10.0	13 26 17.30	13 2 16.7	11.3	4.2	0.29
10	0 47.0	10 5 46.88	13 22 43.6	6.6	2.5	0.17	25	1 6.5	13 26 44.23	13 6 45.1	11.5	4.3	0.29
11	0 50.1	10 12 48.56	+12 39 49.4	6.7	2.5	0.17	26	1 2.7	13 26 48.02	−13 7 51.6	11.8	4.4	0.30
12	0 53.0	10 19 41.67	11 56 27.0	6.7	2.5	0.17	27	0 58.4	13 26 27.41	13 5 21.2	12.0	4.5	0.31
13	0 55.8	10 26 26.45	11 12 41.6	6.7	2.5	0.17	28	0 53.7	13 25 41.39	12 58 59.0	12.2	4.6	0.31
14	0 58.5	10 33 3.14	10 28 38.0	6.7	2.5	0.17	29	0 48.6	13 24 29.17	12 48 31.5	12.4	4.7	0.32
15	1 1.0	10 39 32.00	9 44 20.9	6.8	2.5	0.17	30	0 43.0	13 22 50.30	12 33 46.9	12.6	4.8	0.32
16	1 3.4	10 45 53.28	+ 8 59 54.3	6.8	2.6	0.17	31	0 37.0	13 20 45.20	−12 14 36.2	12.8	4.8	0.33
17	1 5.7	10 52 7.24	+ 8 15 22.2	6.9	2.6	0.17	32	0 30.5	13 18 14.49	−11 50 55.7	13.0	4.9	0.33

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	0 37.0	13 20 45.20	−12 14 36.2	12.8	4.8	0.33	Nov. 15	23 17.6	15 2 30.63	−16 38 13.3	6.3	2.4	0.17
2	0 30.5	13 18 14.49	11 50 55.7	13.0	4.9	0.33	16	23 19.9	15 8 49.25	17 11 11.7	6.3	2.4	0.17
3	0 23.7	13 15 19.92	11 22 48.1	13.1	4.9	0.33	17	23 22.3	15 15 9.41	17 43 22.5	6.3	2.4	0.17
4	0 16.5	13 12 4.06	10 50 24.1	13.2	4.9	0.33	18	23 24.7	15 21 31.13	18 14 43.5	6.3	2.3	0.17
5	0 9.0	13 8 30.42	10 14 3.8	13.3	4.9	0.34	19	23 27.1	15 27 54.44	18 45 12.6	6.2	2.3	0.17
6	0 1.3	13 4 43.54	− 9 34 18.3	13.4	5.0	0.34	20	23 29.6	15 34 19.37	−19 14 47.8	6.2	2.3	0.17
6	23 53.5	13 0 48.83	8 51 49.6	13.4	5.0	0.34	21	23 32.1	15 40 45.97	19 43 27.7	6.2	2.3	0.17
7	23 45.6	12 56 52.41	8 7 30.6	13.3	5.0	0.33	22	23 34.6	15 47 14.26	20 11 10.5	6.2	2.3	0.17
8	23 37.8	12 53 0.87	7 22 21.7	13.1	4.9	0.33	23	23 37.2	15 53 44.25	20 37 54.3	6.2	2.3	0.17
9	23 30.2	12 49 20.92	6 37 29.0	12.9	4.9	0.33	24	23 39.8	16 0 15.99	21 3 37.6	6.1	2.3	0.17
10	23 23.0	12 45 59.10	− 5 54 0.1	12.8	4.8	0.32	25	23 42.4	16 6 49.49	−21 28 18.7	6.1	2.3	0.17
11	23 16.1	12 43 1.41	5 13 0.5	12.6	4.8	0.32	26	23 45.1	16 13 24.78	21 51 56.4	6.1	2.3	0.17
12	23 9.7	12 40 33.01	4 35 30.0	12.4	4.7	0.31	27	23 47.7	16 20 1.88	22 14 29.1	6.1	2.3	0.17
13	23 3.8	12 38 37.98	4 2 19.1	12.1	4.6	0.30	28	23 50.4	16 26 40.79	22 35 55.3	6.1	2.3	0.17
14	22 58.5	12 37 19.33	3 34 7.2	11.8	4.4	0.30	29	23 53.1	16 33 21.51	22 56 13.4	6.1	2.3	0.17
15	22 53.9	12 36 38.78	− 3 11 22.1	11.6	4.3	0.29	30	23 55.9	16 40 4.04	−23 15 22.0	6.1	2.3	0.17
16	22 49.9	12 36 36.95	2 54 19.8	11.3	4.1	0.28	Dec. 1	23 58.7	16 46 48.36	23 33 19.8	6.1	2.3	0.17
17	22 46.7	12 37 13.43	2 43 4.7	11.0	4.0	0.27	3	0 1.5	16 53 34.43	23 50 5.2	6.1	2.3	0.17
18	22 44.0	12 38 27.00	2 37 32.5	10.6	3.9	0.26	4	0 4.3	17 0 22.21	24 5 36.8	6.1	2.3	0.17
19	22 41.9	12 40 15.72	2 37 31.4	10.3	3.8	0.26	5	0 7.2	17 7 11.66	24 19 53.2	6.2	2.3	0.17
20	22 40.3	12 42 37.20	− 2 42 43.3	9.9	3.7	0.25	6	0 10.1	17 14 2.73	−24 32 52.8	6.2	2.3	0.17
21	22 39.2	12 45 28.74	2 52 45.7	9.5	3.6	0.24	7	0 13.0	17 20 55.33	24 44 34.4	6.2	2.3	0.17
22	22 38.6	12 48 47.49	3 7 13.7	9.2	3.5	0.23	8	0 15.9	17 27 49.37	24 54 56.5	6.2	2.3	0.17
23	22 38.4	12 52 30.57	3 25 41.2	8.9	3.4	0.23	9	0 18.9	17 34 44.75	25 3 57.8	6.2	2.4	0.17
24	22 38.5	12 56 35.15	3 47 41.4	8.7	3.3	0.22	10	0 21.9	17 41 41.36	25 11 36.8	6.3	2.4	0.17
25	22 38.9	13 0 58.59	− 4 12 48.3	8.5	3.2	0.22	11	0 24.9	17 48 39.05	−25 17 52.3	6.3	2.4	0.17
26	22 39.6	13 5 38.45	4 40 36.7	8.3	3.1	0.21	12	0 27.9	17 55 37.66	25 22 43.0	6.3	2.4	0.17
27	22 40.6	13 10 32.48	5 10 43.0	8.1	3.0	0.21	13	0 30.9	18 2 37.02	25 26 7.7	6.3	2.4	0.17
28	22 41.8	13 15 38.68	5 42 45.9	8.0	3.0	0.20	14	0 34.0	18 9 36.93	25 28 5.0	6.4	2.4	0.18
29	22 43.1	13 20 55.29	6 16 25.2	7.8	2.9	0.20	15	0 37.1	18 16 37.17	25 28 34.0	6.4	2.4	0.18
30	22 44.5	13 26 20.78	− 6 51 22.9	7.7	2.9	0.19	16	0 40.1	18 23 37.48	−25 27 33.4	6.5	2.4	0.18
31	22 46.2	13 31 53.80	7 27 22.5	7.5	2.8	0.19	17	0 43.2	18 30 37.59	25 25 2.4	6.5	2.5	0.18
Nov. 1	22 47.9	13 37 33.23	8 4 10.0	7.4	2.8	0.19	18	0 46.2	18 37 37.19	25 21 0.2	6.6	2.5	0.18
2	22 49.7	13 43 18.11	8 41 32.4	7.2	2.7	0.19	19	0 49.2	18 44 35.92	25 15 26.1	6.6	2.5	0.19
3	22 51.6	13 49 7.64	9 19 18.5	7.1	2.7	0.18	20	0 52.2	18 51 33.38	25 8 19.5	6.7	2.6	0.19
4	22 53.5	13 55 1.16	− 9 57 18.1	7.0	2.6	0.18	21	0 55.2	18 58 29.14	−24 59 39.9	6.7	2.6	0.19
5	22 55.5	14 0 58.10	10 35 22.4	6.9	2.6	0.18	22	0 58.2	19 5 22.71	24 49 27.5	6.8	2.6	0.19
6	22 57.5	14 6 58.02	11 13 23.4	6.8	2.6	0.18	23	1 1.1	19 12 13.54	24 37 42.4	6.9	2.6	0.19
7	22 59.6	14 13 0.55	11 51 14.6	6.8	2.6	0.18	24	1 4.0	19 19 0.97	24 24 25.2	6.9	2.6	0.20
8	23 1.8	14 19 5.40	12 28 50.1	6.7	2.5	0.18	25	1 6.8	19 25 44.33	24 9 36.8	7.0	2.7	0.20
9	23 4.0	14 25 12.35	−13 6 4.6	6.7	2.5	0.17	26	1 9.5	19 32 22.81	−23 53 18.8	7.1	2.7	0.20
10	23 6.2	14 31 21.20	13 42 52.9	6.6	2.5	0.17	27	1 12.0	19 38 55.52	23 35 33.0	7.2	2.8	0.20
11	23 8.4	14 37 31.83	14 19 11.0	6.5	2.5	0.17	28	1 14.5	19 45 21.46	23 16 22.2	7.3	2.8	0.20
12	23 10.7	14 43 44.13	14 54 55.3	6.5	2.5	0.17	29	1 16.9	19 51 39.45	22 55 49.8	7.4	2.9	0.21
13	23 12.9	14 49 58.07	15 30 2.4	6.4	2.4	0.17	30	1 19.0	19 57 48.19	22 34 0.4	7.6	2.9	0.21
14	23 15.2	14 56 13.58	−16 4 29.4	6.4	2.4	0.17	31	1 21.0	20 3 46.20	−22 10 59.4	7.8	3.0	0.21
15	23 17.6	15 2 30.63	−16 38 13.3	6.3	2.4	0.17	32	1 22.9	20 9 31.88	−21 46 53.2	7.9	3.0	0.21

FOR TRANSIT AT WASHINGTON.

ate.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T.of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T.of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
an. 0	20 56.7	15 39 43.11	-16 50 11.9	9.6	9.2	0.64	Feb. 15	21 48.2	19 32 33.75	-21 8 34.6	7.2	6.9	0.50
1	20 57.5	15 44 24.86	17 6 59.2	9.5	9.2	0.64	16	21 49.4	19 37 44.70	21 0 10.2	7.1	6.9	0.49
2	20 58.3	15 49 8.04	17 23 26.2	9.4	9.1	0.63	17	21 50.6	19 42 55.14	20 51 8.8	7.1	6.9	0.49
3	20 59.2	15 53 52.63	17 39 32.2	9.4	9.0	0.63	18	21 51.7	19 48 5.04	20 41 30.8	7.1	6.8	0.49
4	21 0.0	15 58 38.60	17 55 16.3	9.3	8.9	0.63	19	21 52.9	19 53 14.35	20 31 16.6	7.0	6.8	0.48
5	21 0.9	16 3 25.95	-18 10 37.9	9.2	8.9	0.62	20	21 54.1	19 58 23.03	-20 20 26.6	7.0	6.8	0.48
6	21 1.7	16 8 14.65	18 25 36.0	9.1	8.8	0.62	21	21 55.3	20 3 31.05	20 9 1.0	7.0	6.7	0.48
7	21 2.6	16 13 4.70	18 40 9.8	9.1	8.7	0.62	22	21 56.5	20 8 38.37	19 57 0.2	6.9	6.7	0.47
8	21 3.5	16 17 56.07	18 54 18.5	9.0	8.7	0.61	23	21 57.7	20 13 44.97	19 44 24.6	6.9	6.7	0.47
9	21 4.4	16 22 48.72	19 8 1.3	8.9	8.6	0.61	24	21 58.9	20 18 50.81	19 31 14.5	6.9	6.6	0.47
10	21 5.3	16 27 42.63	-19 21 17.5	8.9	8.6	0.61	25	22 0.0	20 23 55.85	-19 17 30.5	6.8	6.6	0.47
11	21 6.2	16 32 37.77	19 34 6.4	8.8	8.5	0.60	26	22 1.2	20 29 0.10	19 3 12.9	6.8	6.6	0.46
12	21 7.2	16 37 34.12	19 46 27.3	8.8	8.4	0.60	27	22 2.3	20 34 3.52	18 48 22.3	6.8	6.6	0.46
13	21 8.2	16 42 31.63	19 58 19.4	8.7	8.4	0.60	28	22 3.4	20 39 6.08	18 32 59.2	6.7	6.5	0.46
14	21 9.3	16 47 30.27	20 9 42.0	8.7	8.3	0.59	29	22 4.4	20 44 7.77	18 17 4.0	6.7	6.5	0.46
15	21 10.4	16 52 30.01	-20 20 34.5	8.6	8.3	0.59	Mar. 1	22 5.5	20 49 8.57	-18 0 37.4	6.7	6.5	0.45
16	21 11.5	16 57 30.83	20 30 56.3	8.5	8.2	0.59	2	22 6.5	20 54 8.46	17 43 39.8	6.7	6.4	0.45
17	21 12.6	17 2 32.67	20 40 46.8	8.5	8.2	0.58	3	22 7.6	20 59 7.45	17 26 11.7	6.6	6.4	0.45
18	21 13.7	17 7 35.51	20 50 5.4	8.4	8.1	0.58	4	22 8.6	21 4 5.50	17 8 13.6	6.6	6.4	0.44
19	21 14.8	17 12 39.30	20 58 51.6	8.3	8.0	0.58	5	22 9.6	21 9 2.62	16 49 46.2	6.6	6.4	0.44
20	21 15.9	17 17 44.00	-21 7 4.8	8.3	8.0	0.57	6	22 10.6	21 13 58.80	-16 30 50.1	6.6	6.3	0.44
21	21 17.0	17 22 49.57	21 14 44.5	8.3	7.9	0.57	7	22 11.6	21 18 54.01	16 11 26.0	6.5	6.3	0.44
22	21 18.2	17 27 55.97	21 21 50.2	8.2	7.9	0.57	8	22 12.5	21 23 48.25	15 51 34.4	6.5	6.3	0.43
23	21 19.3	17 33 3.15	21 28 21.5	8.2	7.8	0.57	9	22 13.5	21 28 41.53	15 31 16.0	6.5	6.2	0.43
24	21 20.5	17 38 11.09	21 34 17.9	8.1	7.8	0.56	10	22 14.4	21 33 33.83	15 10 31.4	6.4	6.2	0.43
25	21 21.7	17 43 19.73	-21 39 39.0	8.1	7.8	0.56	11	22 15.3	21 38 25.16	-14 49 21.4	6.4	6.2	0.43
26	21 23.0	17 48 29.03	21 44 24.4	8.0	7.7	0.56	12	22 16.2	21 43 15.53	14 27 46.6	6.4	6.2	0.42
27	21 24.2	17 53 38.95	21 48 33.8	8.0	7.7	0.55	13	22 17.1	21 48 4.94	14 5 47.6	6.3	6.1	0.42
28	21 25.4	17 58 49.42	21 52 6.7	7.9	7.6	0.55	14	22 18.0	21 52 53.38	13 43 25.2	6.3	6.1	0.42
29	21 26.6	18 4 0.40	21 55 2.9	7.9	7.6	0.55	15	22 18.9	21 57 40.88	13 20 40.1	6.3	6.1	0.42
30	21 27.9	18 9 11.86	-21 57 22.1	7.8	7.5	0.54	16	22 19.7	22 2 27.44	-12 57 32.9	6.3	6.1	0.42
31	21 29.1	18 14 23.74	21 59 4.0	7.8	7.5	0.54	17	22 20.5	22 7 13.08	12 34 4.2	6.2	6.1	0.41
eb. 1	21 30.4	18 19 35.99	22 0 8.4	7.7	7.5	0.54	18	22 21.3	22 11 57.81	12 10 14.7	6.2	6.0	0.41
2	21 31.7	18 24 48.54	22 0 35.0	7.7	7.4	0.53	19	22 22.1	22 16 41.64	11 46 5.2	6.2	6.0	0.41
3	21 33.0	18 30 1.34	22 0 23.7	7.6	7.4	0.53	20	22 22.9	22 21 24.58	11 21 36.4	6.2	6.0	0.41
4	21 34.3	18 35 14.33	-21 59 34.3	7.6	7.3	0.53	21	22 23.7	22 26 6.67	-10 56 48.9	6.2	6.0	0.41
5	21 35.5	18 40 27.45	21 58 6.8	7.6	7.3	0.53	22	22 24.4	22 30 47.93	10 31 43.6	6.1	6.0	0.40
6	21 36.8	18 45 40.65	21 56 1.1	7.5	7.3	0.52	23	22 25.0	22 35 28.38	10 6 20.9	6.1	5.9	0.40
7	21 38.1	18 50 53.87	21 53 17.1	7.5	7.2	0.52	24	22 25.7	22 40 8.05	9 40 41.5	6.1	5.9	0.40
8	21 39.4	18 56 7.05	21 49 54.9	7.4	7.2	0.52	25	22 26.4	22 44 46.96	9 14 46.1	6.1	5.9	0.40
9	21 40.6	19 1 20.15	-21 45 54.3	7.4	7.1	0.51	26	22 27.1	22 49 25.14	- 8 48 35.4	6.1	5.9	0.40
10	21 41.9	19 6 33.10	21 41 15.6	7.4	7.1	0.51	27	22 27.8	22 54 2.62	8 22 10.1	6.0	5.9	0.39
11	21 43.1	19 11 45.85	21 35 58.9	7.3	7.1	0.51	28	22 28.5	22 58 39.43	7 55 30.9	6.0	5.8	0.39
12	21 44.4	19 16 58.35	21 30 4.3	7.3	7.0	0.51	29	22 29.2	23 3 15.60	7 28 38.4	6.0	5.8	0.39
13	21 45.7	19 22 10.53	21 23 31.9	7.2	7.0	0.50	30	22 29.8	23 7 51.17	7 1 33.3	6.0	5.8	0.39
14	21 47.0	19 27 22.34	-21 16 21.9	7.2	7.0	0.50	31	22 30.5	23 12 26.17	- 6 34 16.3	6.0	5.8	0.39
15	21 48.2	19 32 33.75	-21 8 34.6	7.2	6.9	0.50	32	22 31.1	23 17 0.64	- 6 6 47.9	6.0	5.8	0.39

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	22 31.1	23 17 0.64	− 6 6 47.9	6.0	5.8	0.39	May 17	23 0.6	2 47 59.70	+14 58 38.2	5.3	5.1	0.36
2	22 31.7	23 21 34.60	5 39 9.0	6.0	5.8	0.39	18	23 1.5	2 52 48.95	15 21 47.6	5.3	5.1	0.36
3	22 32.3	23 26 8.07	5 11 20.3	5.9	5.7	0.39	19	23 2.4	2 57 39.25	15 44 34.4	5.3	5.1	0.36
4	22 32.9	23 30 41.11	4 43 22.4	5.9	5.7	0.39	20	23 3.3	3 2 30.62	16 6 57.9	5.3	5.1	0.36
5	22 33.5	23 35 13.74	4 15 16.1	5.9	5.7	0.38	21	23 4.2	3 7 23.07	16 28 57.4	5.3	5.1	0.36
6	22 34.1	23 39 45.98	− 3 47 2.1	5.9	5.7	0.38	22	23 5.1	3 12 16.60	+16 50 32.3	5.3	5.1	0.36
7	22 34.7	23 44 17.89	3 18 41.1	5.8	5.7	0.38	23	23 6.1	3 17 11.25	17 11 41.8	5.3	5.1	0.36
8	22 35.3	23 48 49.50	2 50 13.7	5.8	5.6	0.38	24	23 7.1	3 22 7.01	17 32 25.2	5.3	5.1	0.36
9	22 35.9	23 53 20.84	2 21 40.6	5.8	5.6	0.38	25	23 8.1	3 27 3.89	17 52 41.7	5.3	5.1	0.36
10	22 36.5	23 57 51.95	1 53 2.5	5.8	5.6	0.37	26	23 9.1	3 32 1.90	18 12 30.7	5.2	5.1	0.36
11	22 37.0	0 2 22.86	− 1 24 20.2	5.8	5.6	0.37	27	23 10.2	3 37 1.03	+18 31 51.5	5.2	5.1	0.36
12	22 37.6	0 6 53.60	0 55 34.5	5.7	5.6	0.37	28	23 11.2	3 42 1.30	18 50 43.5	5.2	5.1	0.36
13	22 38.2	0 11 24.21	− 0 26 46.0	5.7	5.6	0.37	29	23 12.3	3 47 2.70	19 9 5.8	5.2	5.1	0.36
14	22 38.8	0 15 54.72	+ 0 2 4.6	5.7	5.5	0.37	30	23 13.4	3 52 5.23	19 26 57.9	5.2	5.0	0.36
15	22 39.3	0 20 25.18	0 30 56.7	5.7	5.5	0.37	31	23 14.6	3 57 8.89	19 44 19.1	5.2	5.0	0.36
16	22 39.9	0 24 55.62	+ 0 59 49.5	5.7	5.5	0.37	June 1	23 15.7	4 2 13.67	+20 1 8.8	5.2	5.0	0.36
17	22 40.4	0 29 26.09	1 28 42.5	5.7	5.5	0.37	2	23 16.9	4 7 19.55	20 17 26.2	5.2	5.0	0.36
18	22 41.0	0 33 56.61	1 57 34.9	5.7	5.5	0.37	3	23 18.1	4 12 26.51	20 33 10.9	5.2	5.0	0.36
19	22 41.5	0 38 27.23	2 26 25.9	5.6	5.5	0.36	4	23 19.3	4 17 34.55	20 48 22.0	5.2	5.0	0.36
20	22 42.1	0 42 58.00	2 55 14.8	5.6	5.4	0.36	5	23 20.5	4 22 43.63	21 2 59.1	5.2	5.0	0.36
21	22 42.7	0 47 28.96	+ 3 24 1.1	5.6	5.4	0.36	6	23 21.7	4 27 53.73	+21 17 1.3	5.2	5.0	0.36
22	22 43.3	0 52 0.13	3 52 44.0	5.6	5.4	0.36	7	23 22.9	4 33 4.83	21 30 28.2	5.2	5.0	0.36
23	22 43.8	0 56 31.56	4 21 22.9	5.6	5.4	0.36	8	23 24.2	4 38 16.90	21 43 19.3	5.2	5.0	0.36
24	22 44.4	1 1 3.28	4 49 57.1	5.6	5.4	0.36	9	23 25.4	4 43 29.91	21 55 33.9	5.2	5.0	0.36
25	22 45.0	1 5 35.34	5 18 26.0	5.6	5.4	0.36	10	23 26.7	4 48 43.83	22 7 11.5	5.2	5.0	0.36
26	22 45.6	1 10 7.78	+ 5 46 48.8	5.5	5.3	0.36	11	23 28.0	4 53 58.61	+22 18 11.7	5.2	5.0	0.36
27	22 46.2	1 14 40.64	6 15 4.8	5.5	5.3	0.36	12	23 29.3	4 59 14.22	22 28 33.8	5.2	5.0	0.36
28	22 46.8	1 19 13.95	6 43 13.5	5.5	5.3	0.36	13	23 30.6	5 4 30.63	22 38 17.6	5.2	5.0	0.36
29	22 47.4	1 23 47.77	7 11 13.9	5.5	5.3	0.36	14	23 32.0	5 9 47.79	22 47 22.5	5.1	5.0	0.36
30	22 48.0	1 28 22.13	7 39 5.5	5.5	5.3	0.36	15	23 33.3	5 15 5.64	22 55 48.2	5.1	5.0	0.36
May 1	22 48.7	1 32 57.06	+ 8 6 47.6	5.5	5.3	0.36	16	23 34.7	5 20 24.16	+23 3 34.2	5.1	5.0	0.36
2	22 49.3	1 37 32.58	8 34 19.5	5.5	5.3	0.36	17	23 36.0	5 25 43.28	23 10 40.1	5.1	5.0	0.36
3	22 50.0	1 42 8.75	9 1 40.5	5.5	5.3	0.36	18	23 37.4	5 31 2.96	23 17 5.7	5.1	5.0	0.36
4	22 50.6	1 46 45.60	9 28 49.8	5.5	5.3	0 36	19	23 38.8	5 36 23.15	23 22 50.6	5.1	5.0	0.36
5	22 51.3	1 51 23.17	9 55 46.7	5.4	5.3	0.36	20	23 40.2	5 41 43.81	23 27 54.5	5.1	5.0	0.36
6	22 52.0	1 56 1.48	+10 22 30.5	5.4	5.3	0.36	21	23 41.6	5 47 4.88	+23 32 17.2	5.1	5.0	0.36
7	22 52.7	2 0 40.56	10 49 0.5	5.4	5.2	0.36	22	23 43.1	5 52 26.31	23 35 58.3	5.1	5.0	0.36
8	22 53.5	2 5 20.44	11 15 16.0	5.4	5.2	0.36	23	23 44.5	5 57 48.04	23 38 57.8	5.1	4.9	0.36
9	22 54.3	2 10 1.15	11 41 16.1	5.4	5.2	0.36	24	23 45.9	6 3 10.02	23 41 15.6	5.1	4.9	0.36
10	22 55.0	2 14 42.71	12 7 0.1	5.4	5.2	0.35	25	23 47.3	6 8 32.20	23 42 51.4	5.1	4.9	0.36
11	22 55.8	2 19 25.16	+12 32 27.4	5.4	5.2	0.35	26	23 48.7	6 13 54.54	+23 43 45.0	5.1	4.9	0.36
12	22 56.5	2 24 8.52	12 57 37.3	5.4	5.2	0.35	27	23 50.1	6 19 16.95	23 43 56.4	5.1	4.9	0.36
13	22 57.3	2 28 52.81	13 22 28.9	5.4	5.2	0.35	28	23 51.5	6 24 39.39	23 43 25.6	5.1	4.9	0.36
14	22 58.1	2 33 38.05	13 47 1.5	5.4	5.2	0.35	29	23 52.9	6 30 1.81	23 42 12.5	5.1	4.9	0.36
15	22 58.9	2 38 24.27	14 11 14.4	5.3	5.2	0.35	30	23 54.4	6 35 24.14	23 40 17.0	5.1	4.9	0.36
16	22 59.7	2 43 11.48	+14 35 6.9	5.3	5.1	0.35	31	23 55.8	6 40 46.34	+23 37 39.2	5.1	4.9	0.36
17	23 0.6	2 47 59.70	+14 58 38.2	5.3	5.1	0.36	32	23 57.2	6 46 8.34	+23 34 19.3	5.1	4.9	0.36

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	23 55.8	6 40 46.34	+23 37 39.2	5.1	4.9	0.36	Aug. 17	0 47.1	10 33 33.42	+10 37 42.6	5.2	5.1	0.34
2	23 57.2	6 46 8.34	23 34 19.3	5.1	4.9	0.36	18	0 47.8	10 38 13.09	10 10 1.4	5.2	5.1	0.34
3	23 58.6	6 51 30.08	23 30 17.4	5.1	4.9	0.36	19	0 48.5	10 42 51.92	9 42 4.0	5.3	5.1	0.34
5	0 0.1	6 56 51.51	23 25 33.4	5.1	4.9	0.36	20	0 49.2	10 47 29.93	9 13 51.1	5.3	5.1	0.34
6	0 1.5	7 2 12.56	23 20 7.5	5.1	4.9	0.36	21	0 49.9	10 52 7.16	8 45 23.4	5.3	5.1	0.34
7	0 2.9	7 7 33.18	+23 14 0.0	5.1	4.9	0.36	22	0 50.6	10 56 43.65	+ 8 16 41.7	5.3	5.1	0.34
8	0 4.3	7 12 53.32	23 7 11.1	5.1	4.9	0.36	23	0 51.3	11 1 19.43	7 47 46.6	5.3	5.1	0.34
9	0 5.7	7 18 12.93	22 59 41.1	5.1	4.9	0.36	24	0 51.9	11 5 54.54	7 18 38.9	5.3	5.1	0.34
10	0 7.1	7 23 31.96	22 51 30.1	5.1	4.9	0.36	25	0 52.5	11 10 29.01	6 49 19.2	5.3	5.1	0.34
11	0 8.4	7 28 50.36	22 42 38.5	5.1	4.9	0.36	26	0 53.1	11 15 2.89	6 19 48.3	5.3	5.1	0.34
12	0 9.8	7 34 8.06	+22 33 6.8	5.1	4.9	0.36	27	0 53.7	11 19 36.22	+ 5 50 6.9	5.3	5.1	0.34
13	0 11.1	7 39 25.01	22 22 55.3	5.1	4.9	0.36	28	0 54.3	11 24 9.03	5 20 15.6	5.3	5.2	0.35
14	0 12.4	7 44 41.18	22 12 4.5	5.1	4.9	0.36	29	0 54.9	11 28 41.36	4 50 15.1	5.3	5.2	0.35
15	0 13.7	7 49 56.54	22 0 34.5	5.1	4.9	0.35	30	0 55.5	11 33 13.26	4 20 6.2	5.3	5.2	0.35
16	0 15.0	7 55 11.04	21 48 25.9	5.1	4.9	0.35	31	0 56.1	11 37 44.77	3 49 49.8	5.4	5.2	0.35
17	0 16.3	8 0 24.63	+21 35 39.1	5.1	4.9	0.35	Sept. 1	0 56.7	11 42 15.94	+ 3 19 26.5	5.4	5.2	0.35
18	0 17.6	8 5 37.29	21 22 14.7	5.1	4.9	0.35	2	0 57.3	11 46 46.79	2 48 56.9	5.4	5.2	0.35
19	0 18.8	8 10 48.98	21 8 13.1	5.1	4.9	0.35	3	0 57.8	11 51 17.38	2 18 21.8	5.4	5.2	0.35
20	0 20.1	8 15 59.67	20 53 34.9	5.1	4.9	0.35	4	0 58.4	11 55 47.73	1 47 41.9	5.4	5.2	0.35
21	0 21.3	8 21 9.34	20 38 20.6	5.1	4.9	0.35	5	0 58.9	12 0 17.91	1 16 58.1	5.4	5.2	0.35
22	0 22.5	8 26 17.96	+20 22 30.8	5.1	4.9	0.35	6	0 59.5	12 4 47.94	+ 0 46 11.0	5.4	5.2	0.35
23	0 23.7	8 31 25.52	20 6 6.0	5.1	4.9	0.35	7	1 0.0	12 9 17.87	+ 0 15 21.3	5.4	5.2	0.35
24	0 24.8	8 36 32.00	19 49 6.8	5.1	5.0	0.35	8	1 0.6	12 13 47.74	− 0 15 30.1	5.4	5.3	0.35
25	0 25.9	8 41 37.37	19 31 33.8	5.1	5.0	0.35	9	1 1.1	12 18 17.58	0 46 22.7	5.4	5.3	0.35
26	0 27.0	8 46 41.63	19 13 27.5	5.1	5.0	0.35	10	1 1.7	12 22 47.45	1 17 15.6	5.5	5.3	0.35
27	0 28.1	8 51 44.76	+18 54 48.8	5.1	5.0	0.35	11	1 2.2	12 27 17.38	− 1 48 8.1	5.5	5.3	0.35
28	0 29.2	8 56 46.75	18 35 38.1	5.1	5.0	0.35	12	1 2.8	12 31 47.42	2 18 59.4	5.5	5.3	0.35
29	0 30.3	9 1 47.61	18 15 56.1	5.1	5.0	0.35	13	1 3.3	12 36 17.59	2 49 48.8	5.5	5.3	0.36
30	0 31.4	9 6 47.33	17 55 43.3	5.1	5.0	0.35	14	1 3.9	12 40 47.95	3 20 35.5	5.5	5.3	0.36
31	0 32.4	9 11 45.90	17 35 0.4	5.1	5.0	0.35	15	1 4.5	12 45 18.53	3 51 18.9	5.5	5.3	0.36
Aug. 1	0 33.4	9 16 43.32	+17 13 48.2	5.2	5.0	0.35	16	1 5.1	12 49 49.38	− 4 21 58.2	5.5	5.3	0.36
2	0 34.4	9 21 39.60	16 52 7.3	5.2	5.0	0.35	17	1 5.7	12 54 20.54	4 52 32.6	5.6	5.4	0.36
3	0 35.4	9 26 34.75	16 29 58.5	5.2	5.0	0.35	18	1 6.3	12 58 52.05	5 23 1.5	5.6	5.4	0.36
4	0 36.3	9 31 28.77	16 7 22.3	5.2	5.0	0.35	19	1 6.8	13 3 23.97	5 53 24.0	5.6	5.4	0.36
5	0 37.3	9 36 21.65	15 44 19.7	5.2	5.0	0.35	20	1 7.4	13 7 56.32	6 23 39.6	5.6	5.4	0.36
6	0 38.2	9 41 13.42	+15 20 51.2	5.2	5.0	0.35	21	1 8.0	13 12 29.16	− 6 53 47.3	5.6	5.4	0.36
7	0 39.1	9 46 4.09	14 56 57.7	5.2	5.0	0.35	22	1 8.6	13 17 2.53	7 23 46.5	5.6	5.4	0.37
8	0 40.0	9 50 53.65	14 32 39.8	5.2	5.0	0.34	23	1 9.2	13 21 36.46	7 53 36.6	5.6	5.4	0.37
9	0 40.9	9 55 42.14	14 7 58.2	5.2	5.0	0.34	24	1 9.8	13 26 10.99	8 23 16.7	5.6	5.4	0.37
10	0 41.7	10 0 29.56	13 42 53.6	5.2	5.0	0.34	25	1 10.5	13 30 46.17	8 52 46.2	5.7	5.5	0.37
11	0 42.5	10 5 15.94	+13 17 26.8	5.2	5.0	0.34	26	1 11.1	13 35 22.05	− 9 22 4.1	5.7	5.5	0.37
12	0 43.3	10 10 1.29	12 51 38.6	5.2	5.0	0.34	27	1 11.8	13 39 58.66	9 51 9.9	5.7	5.5	0.37
13	0 44.1	10 14 45.63	12 25 29.8	5.2	5.0	0.34	28	1 12.5	13 44 36.04	10 20 2.7	5.7	5.5	0.37
14	0 44.9	10 19 28.99	11 59 1.0	5.2	5.0	0.34	29	1 13.2	13 49 14.22	10 48 41.7	5.7	5.5	0.38
15	0 45.7	10 24 11.40	11 32 13.1	5.2	5.1	0.34	30	1 13.9	13 53 53.26	11 17 6.3	5.7	5.5	0.38
16	0 46.4	10 28 52.87	+11 5 6.7	5.2	5.1	0.34	31	1 14.7	13 58 33.18	−11 45 15.8	5.7	5.6	0.38
17	0 47.1	10 33 33.42	+10 37 42.6	5.2	5.1	0.34	32	1 15.4	14 3 14.01	−12 13 9.1	5.8	5.6	0.38

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″
Oct. 1	1 14.7	13 58 33.18	−11 45 15.8	5.7	5.6	0.38	Nov. 16	2 7.1	17 52 34.65	−25 5 30.6	6.8
2	1 15.4	14 3 14.01	12 13 9.1	5.8	5.6	0.38	17	2 8.6	17 57 59.21	25 8 1.5	6.8
3	1 16.2	14 7 55.78	12 40 45.6	5.8	5.6	0.38	18	2 10.1	18 3 23.82	25 9 47.4	6.8
4	1 16.9	14 12 38.54	13 8 4.5	5.8	5.6	0.38	19	2 11.6	18 8 48.42	25 10 48.2	6.9
5	1 17.7	14 17 22.30	13 35 5.1	5.8	5.6	0.39	20	2 13.0	18 14 12.94	25 11 4.0	6.9
6	1 18.5	14 22 7.08	−14 1 46.4	5.8	5.6	0.39	21	2 14.5	18 19 37.31	−25 10 34.7	6.9
7	1 19.3	14 26 52.91	14 28 7.8	5.8	5.7	0.39	22	2 15.9	18 25 1.46	25 9 20.3	6.9
8	1 20.1	14 31 39.83	14 54 8.3	5.9	5.7	0.39	23	2 17.4	18 30 25.33	25 7 20.8	7.0
9	1 21.0	14 36 27.86	15 19 47.2	5.9	5.7	0.39	24	2 18.8	18 35 48.86	25 4 36.4	7.0
10	1 21.9	14 41 17.01	15 45 3.7	5.9	5.7	0.40	25	2 20.3	18 41 11.97	25 1 7.1	7.0
11	1 22.8	14 46 7.30	−16 9 57.0	5.9	5.7	0.40	26	2 21.7	18 46 34.60	−24 56 53.1	7.1
12	1 23.7	14 50 58.74	16 34 26.3	5.9	5.7	0.40	27	2 23.1	18 51 56.66	24 51 54.6	7.1
13	1 24.6	14 55 51.35	16 58 30.8	6.0	5.8	0.40	28	2 24.5	18 57 18.10	24 46 11.7	7.1
14	1 25.5	15 0 45.15	17 22 9.8	6.0	5.8	0.40	29	2 25.9	19 2 38.87	24 39 44.9	7.2
15	1 26.5	15 5 40.13	17 45 22.3	6.0	5.8	0.41	30	2 27.3	19 7 58.89	24 32 34.4	7.2
16	1 27.5	15 10 36.32	−18 8 7.7	6.0	5.8	0.41	Dec. 1	2 28.7	19 13 18.10	−24 24 40.4	7.2
17	1 28.5	15 15 33.71	18 30 25.2	6.0	5.8	0.41	2	2 30.0	19 18 36.44	24 16 3.3	7.3
18	1 29.5	15 20 32.32	18 52 14.0	6.0	5.8	0.41	3	2 31.4	19 23 53.85	24 6 43.5	7.3
19	1 30.6	15 25 32.16	19 13 33.3	6.1	5.9	0.41	4	2 32.7	19 29 10.26	23 56 41.4	7.3
20	1 31.7	15 30 33.21	19 34 22.5	6.1	5.9	0.42	5	2 34.0	19 34 25.62	23 45 57.6	7.4
21	1 32.7	15 35 35.49	−19 54 40.8	6.1	5.9	0.42	6	2 35.3	19 39 39.88	−23 34 32.5	7.4
22	1 33.8	15 40 38.98	20 14 27.3	6.1	5.9	0.42	7	2 36.6	19 44 52.98	23 22 26.6	7.4
23	1 35.0	15 45 43.68	20 33 41.5	6.2	5.9	0.42	8	2 37.9	19 50 4.86	23 9 40.4	7.5
24	1 36.2	15 50 49.59	20 52 22.5	6.2	5.9	0.42	9	2 39.2	19 55 15.47	22 56 14.5	7.5
25	1 37.4	15 55 56.70	21 10 29.6	6.2	6.0	0.43	10	2 40.4	20 0 24.77	22 42 9.4	7.6
26	1 38.6	16 1 4.99	−21 28 2.2	6.2	6.0	0.43	11	2 41.5	20 5 32.72	−22 27 25.9	7.6
27	1 39.8	16 6 14.45	21 44 59.5	6.2	6.0	0.43	12	2 42.6	20 10 39.28	22 12 4.4	7.6
28	1 41.0	16 11 25.05	22 1 21.0	6.3	6.1	0.43	13	2 43.7	20 15 44.41	21 56 5.7	7.7
29	1 42.3	16 16 36.79	22 17 5.8	6.3	6.1	0.43	14	2 44.8	20 20 48.07	21 39 30.6	7.7
30	1 43.6	16 21 49.62	22 32 13.4	6.3	6.1	0.44	15	2 45.9	20 25 50.23	21 22 19.7	7.8
31	1 44.9	16 27 3.52	−22 46 43.1	6.3	6.1	0.44	16	2 47.0	20 30 50.87	−21 4 33.7	7.8
Nov. 1	1 46.2	16 32 18.45	23 0 34.3	6.4	6.1	0.44	17	2 48.1	20 35 49.96	20 46 13.2	7.9
2	1 47.5	16 37 34.39	23 13 46.4	6.4	6.2	0.44	18	2 49.1	20 40 47.48	20 27 19.0	7.9
3	1 48.8	16 42 51.30	23 26 18.8	6.4	6.2	0.45	19	2 50.1	20 45 43.42	20 7 51.8	8.0
4	1 50.1	16 48 9.12	23 38 10.9	6.4	6.2	0.45	20	2 51.1	20 50 37.77	19 47 52.3	8.0
5	1 51.4	16 53 27.81	−23 49 22.3	6.5	6.2	0.45	21	2 52.0	20 55 30.50	−19 27 21.3	8.1
6	1 52.8	16 58 47.32	23 59 52.4	6.5	6.3	0.46	22	2 52.9	21 0 21.61	19 6 19.5	8.1
7	1 54.2	17 4 7.59	24 9 40.6	6.5	6.3	0.46	23	2 53.8	21 5 11.08	18 44 47.7	8.2
8	1 55.6	17 9 28.57	24 18 46.6	6.5	6.3	0.46	24	2 54.6	21 9 58.92	18 22 46.7	8.2
9	1 57.0	17 14 50.20	24 27 10.0	6.6	6.3	0.46	25	2 55.4	21 14 45.14	18 0 17.2	8.3
10	1 58.5	17 20 12.43	−24 34 50.3	6.6	6.4	0.47	26	2 56.2	21 19 29.72	−17 37 19.9	8.3
11	1 59.9	17 25 35.19	24 41 47.2	6.6	6.4	0.47	27	2 57.0	21 24 12.68	17 13 55.7	8.4
12	2 1.3	17 30 58.42	24 48 0.4	6.6	6.4	0.47	28	2 57.8	21 28 54.00	16 50 5.2	8.4
13	2 2.7	17 36 22.04	24 53 29.6	6.7	6.4	0.47	29	2 58.5	21 33 33.69	16 25 49.4	8.5
14	2 4.2	17 41 46.00	24 58 14.5	6.7	6.5	0.48	30	2 59.1	21 38 11.78	16 1 8.9	8.5
15	2 5.6	17 47 10.23	−25 2 14.9	6.7	6.5	0.48	31	2 59.8	21 42 48.26	−15 36 4.6	8.6
16	2 7.1	17 52 34.65	−25 5 30.6	6.8	6.5	0.48	32	3 0.4	21 47 23.14	−15 10 37.2	8.6

FOR TRANSIT AT WASHINGTON.

ate.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
uly 1	19 12.0	1 56 6.72	+10 5 6.8	6.6	3.7	0.25	Aug. 16	18 10.5	3 55 49.54	+19 2 37.4	8.0	4.6	0.33
2	19 10.7	1 58 47.44	10 19 56.8	6.6	3.7	0.25	17	18 9.0	3 58 17.00	19 10 42.1	8.1	4.6	0.33
3	19 9.4	2 1 28.05	10 34 39.7	6.6	3.8	0.25	18	18 7.5	4 0 43.86	19 18 37.5	8.1	4.6	0.33
4	19 8.2	2 4 8.55	10 49 15.3	6.7	3.8	0.26	19	18 6.0	4 3 10.10	19 26 23.7	8.1	4.6	0.33
5	19 6.9	2 6 48.96	11 3 43.6	6.7	3.8	0.26	20	18 4.5	4 5 35.70	19 34 0.6	8.2	4.7	0.33
6	19 5.7	2 9 29.25	+11 18 4.6	6.7	3.8	0.26	21	18 3.0	4 8 0.63	+19 41 28.3	8.2	4.7	0.34
7	19 4.4	2 12 9.41	11 32 17.9	6.8	3.8	0.26	22	18 1.5	4 10 24.88	19 48 47.0	8.3	4.7	0.34
8	19 3.1	2 14 49.44	11 46 23.5	6.8	3.9	0.26	23	17 59.9	4 12 48.42	19 55 56.6	8.3	4.7	0.34
9	19 1.9	2 17 29.34	12 0 21.2	6.8	3.9	0.26	24	17 58.4	4 15 11.24	20 2 57.2	8.4	4.8	0.34
10	19 0.6	2 20 9.08	12 14 11.0	6.8	3.9	0.26	25	17 56.8	4 17 33.31	20 9 48.8	8.4	4.8	0.35
11	18 59.3	2 22 48.68	+12 27 52.8	6.8	3.9	0.26	26	17 55.2	4 19 54.62	+20 16 31.5	8.5	4.8	0.35
12	18 58.0	2 25 28.12	12 41 26.5	6.9	3.9	0.27	27	17 53.6	4 22 15.13	20 23 5.3	8.5	4.9	0.35
13	18 56.7	2 28 7.40	12 54 52.1	6.9	3.9	0.27	28	17 52.0	4 24 34.81	20 29 30.4	8.6	4.9	0.35
14	18 55.4	2 30 46.52	13 8 9.1	6.9	4.0	0.27	29	17 50.4	4 26 53.63	20 35 46.8	8.6	4.9	0.35
15	18 54.1	2 33 25.46	13 21 17.9	7.0	4.0	0.28	30	17 48.7	4 29 11.57	20 41 54.6	8.7	5.0	0.36
16	18 52.8	2 36 4.22	+13 34 18.3	7.0	4.0	0.28	31	17 47.1	4 31 28.58	+20 47 53.8	8.7	5.0	0.36
17	18 51.5	2 38 42.80	13 47 10.2	7.1	4.0	0.28	Sept. 1	17 45.4	4 33 44.63	20 53 44.6	8.8	5.0	0.36
18	18 50.2	2 41 21.20	13 59 53.5	7.1	4.0	0.28	2	17 43.7	4 35 59.71	20 59 27.0	8.8	5.0	0.36
19	18 48.9	2 43 59.39	14 12 28.2	7.1	4.0	0.28	3	17 42.0	4 38 13.78	21 5 1.3	8.9	5.1	0.36
20	18 47.6	2 46 37.41	14 24 54.1	7.2	4.0	0.29	4	17 40.3	4 40 26.79	21 10 27.4	8.9	5.1	0.37
21	18 46.3	2 49 15.22	+14 37 11.5	7.2	4.1	0.29	5	17 38.5	4 42 38.72	+21 15 45.5	9.0	5.1	0.37
22	18 45.0	2 51 52.84	14 49 19.9	7.2	4.1	0.29	6	17 36.8	4 44 49.53	21 20 55.8	9.0	5.2	0.37
23	18 43.7	2 54 30.22	15 1 19.5	7.3	4.1	0.29	7	17 35.0	4 46 59.20	21 25 58.5	9.1	5.2	0.37
24	18 42.4	2 57 7.39	15 13 10.2	7.3	4.1	0.29	8	17 33.2	4 49 7.69	21 30 53.6	9.1	5.2	0.37
25	18 41.1	2 59 44.32	15 24 51.8	7.3	4.1	0.29	9	17 31.4	4 51 14.97	21 35 41.3	9.2	5.3	0.38
26	18 39.7	3 2 21.02	+15 36 24.5	7.4	4.1	0.29	10	17 29.6	4 53 21.03	+21 40 21.8	9.2	5.3	0.38
27	18 38.4	3 4 57.47	15 47 48.0	7.4	4.2	0.29	11	17 27.7	4 55 25.81	21 44 55.1	9.3	5.3	0.38
28	18 37.1	3 7 33.65	15 59 2.4	7.4	4.2	0.29	12	17 25.8	4 57 29.30	21 49 21.5	9.3	5.4	0.38
29	18 35.7	3 10 9.55	16 10 7.5	7.4	4.2	0.29	13	17 23.9	4 59 31.47	21 53 41.1	9.4	5.4	0.39
30	18 34.4	3 12 45.17	16 21 3.3	7.5	4.2	0.29	14	17 22.0	5 1 32.29	21 57 54.1	9.5	5.4	0.39
31	18 33.0	3 15 20.47	+16 31 49.7	7.5	4.2	0.30	15	17 20.1	5 3 31.71	+22 2 0.6	9.5	5.5	0.39
Aug. 1	18 31.7	3 17 55.46	16 42 26.7	7.6	4.3	0.30	16	17 18.1	5 5 29.73	22 6 1.0	9.6	5.5	0.40
2	18 30.3	3 20 30.11	16 52 54.3	7.6	4.3	0.30	17	17 16.1	5 7 26.30	22 9 55.3	9.7	5.6	0.40
3	18 28.9	3 23 4.40	17 3 12.5	7.7	4.3	0.30	18	17 14.1	5 9 21.39	22 13 43.8	9.8	5.6	0.40
4	18 27.6	3 25 38.31	17 13 21.1	7.7	4.3	0.31	19	17 12.1	5 11 14.95	22 17 26.5	9.8	5.7	0.41
5	18 26.2	3 28 11.83	+17 23 20.1	7.7	4.4	0.31	20	17 10.0	5 13 6.96	+22 21 3.6	9.9	5.7	0.41
6	18 24.8	3 30 44.93	17 33 9.6	7.8	4.4	0.31	21	17 7.9	5 14 57.39	22 24 35.3	10.0	5.7	0.41
7	18 23.4	3 33 17.60	17 42 49.4	7.8	4.4	0.31	22	17 5.7	5 16 46.19	22 28 1.9	10.1	5.8	0.41
8	18 22.0	3 35 49.83	17 52 19.6	7.8	4.4	0.31	23	17 3.6	5 18 33.32	22 31 23.5	10.2	5.8	0.42
9	18 20.6	3 38 21.60	18 1 40.1	7.8	4.4	0.31	24	17 1.4	5 20 18.72	22 34 40.4	10.2	5.9	0.42
10	18 19.2	3 40 52.87	+18 10 51.1	7.9	4.5	0.31	25	16 59.2	5 22 2.36	+22 37 52.6	10.3	5.9	0.42
11	18 17.7	3 43 23.65	18 19 52.6	7.9	4.5	0.31	26	16 57.0	5 23 44.18	22 41 0.5	10.3	6.0	0.43
12	18 16.3	3 45 53.92	18 28 44.6	7.9	4.5	0.32	27	16 54.7	5 25 24.14	22 44 4.1	10.4	6.0	0.43
13	18 14.9	3 48 23.66	18 37 26.9	7.9	4.5	0.32	28	16 52.4	5 27 2.19	22 47 3.7	10.5	6.0	0.43
14	18 13.4	3 50 52.85	18 45 59.8	8.0	4.6	0.32	29	16 50.1	5 28 38.25	22 49 59.6	10.6	6.1	0.44
15	18 11.9	3 53 21.49	+18 54 23.3	8.0	4.6	0.32	30	16 47.7	5 30 12.30	+22 52 52.0	10.6	6.1	0.44
16	18 10.5	3 55 49.54	+19 2 37.4	8.0	4.6	0.33	Oct. 1	16 45.3	5 31 44.28	+22 55 41.0	10.7	6.2	0.44

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	16 45.3	5 31 44.28	+22 55 41.0	10.7	6.2	0.44	Nov. 16	14 2.8	5 50 7.82	+24 57 51.9	15.0	8.6	0.63
2	16 42.9	5 33 14.13	22 58 27.0	10.8	6.2	0.44	17	13 57.8	5 49 8.61	25 0 39.5	15.1	8.6	0.63
3	16 40.4	5 34 41.80	23 1 10.0	10.9	6.2	0.45	18	13 52.9	5 48 5.89	25 3 24.5	15.1	8.6	0.64
4	16 37.9	5 36 7.25	23 3 50.4	11.0	6.3	0.45	19	13 47.8	5 46 59.72	25 6 6.5	15.2	8.7	0.64
5	16 35.3	5 37 30.41	23 6 28.4	11.0	6.3	0.45	20	13 42.8	5 45 50.20	25 8 45.0	15.2	8.7	0.64
6	16 32.7	5 38 51.24	+23 9 4.3	11.1	6.4	0.46	21	13 37.6	5 44 37.39	+25 11 19.7	15.3	8.7	0.64
7	16 30.1	5 40 9.69	23 11 38.3	11.2	6.4	0.46	22	13 32.4	5 43 21.39	25 13 50.3	15.4	8.8	0.65
8	16 27.4	5 41 25.70	23 14 10.6	11.3	6.5	0.46	23	13 27.2	5 42 2.35	25 16 16.1	15.4	8.8	0.65
9	16 24.7	5 42 39.22	23 16 41.5	11.4	6.5	0.47	24	13 21.9	5 40 40.37	25 18 36.6	15.5	8.8	0.65
10	16 21.8	5 43 50.20	23 19 11.1	11.5	6.6	0.47	25	13 16.6	5 39 15.59	25 20 51.5	15.5	8.9	0.66
11	16 19.2	5 44 58.58	+23 21 39.8	11.6	6.6	0.47	26	13 11.2	5 37 48.13	+25 23 0.5	15.6	8.9	0.66
12	16 16.3	5 46 4.34	23 24 7.6	11.6	6.7	0.48	27	13 5.6	5 36 18.19	25 25 3.3	15.6	8.9	0.66
13	16 13.4	5 47 7.42	23 26 34.6	11.7	6.7	0.48	28	13 0.2	5 34 45.93	25 26 59.3	15.6	8.9	0.66
14	16 10.5	5 48 7.78	23 29 1.3	11.8	6.8	0.48	29	12 54.7	5 33 11.53	25 28 48.2	15.6	8.9	0.66
15	16 7.6	5 49 5.35	23 31 27.9	11.9	6.8	0.49	30	12 49.2	5 31 35.12	25 30 29.5	15.7	8.9	0.66
16	16 4.5	5 50 0.08	+23 33 54.5	12.0	6.9	0.49	Dec. 1	12 43.6	5 29 56.94	+25 32 3.0	15.7	9.0	0.66
17	16 1.5	5 50 51.92	23 36 21.3	12.1	6.9	0.50	2	12 38.0	5 28 17.25	25 33 28.4	15.7	9.0	0.67
18	15 58.3	5 51 40.82	23 38 48.3	12.2	7.0	0.50	3	12 32.4	5 26 36.24	25 34 45.5	15.7	9.0	0.67
19	15 55.2	5 52 26.73	23 41 15.9	12.3	7.0	0.50	4	12 26.8	5 24 54.12	25 35 54.0	15.7	9.0	0.67
20	15 51.9	5 53 9.59	23 43 44.1	12.4	7.1	0.51	5	12 21.1	5 23 11.15	25 36 54.0	15.8	9.0	0.67
21	15 48.7	5 53 49.32	+23 46 13.1	12.5	7.1	0.51	6	12 15.5	5 21 27.55	+25 37 45.2	15.8	9.0	0.67
22	15 45.4	5 54 25.88	23 48 43.0	12.6	7.2	0.51	7	12 9.8	5 19 43.57	25 38 27.7	15.8	9.0	0.67
23	15 42.0	5 54 59.21	23 51 14.1	12.7	7.2	0.52	8	12 4.2	5 17 59.45	25 39 1.5	15.8	9.0	0.67
24	15 38.6	5 55 29.24	23 53 46.4	12.8	7.3	0.52	9	11 58.5	5 16 15.43	25 39 26.9	15.7	8.9	0.66
25	15 35.1	5 55 55.94	23 56 19.9	12.9	7.3	0.53	10	11 52.8	5 14 31.75	25 39 44.0	15.7	8.9	0.66
26	15 31.5	5 56 19.23	+23 58 54.8	13.0	7.4	0.53	11	11 47.3	5 12 48.62	+25 39 52.8	15.7	8.9	0.66
27	15 27.9	5 56 39.05	24 1 31.2	13.1	7.5	0.54	12	11 41.6	5 11 6.27	25 39 53.1	15.6	8.9	0.66
28	15 24.2	5 56 55.32	24 4 9.3	13.2	7.5	0.54	13	11 36.0	5 9 24.90	25 39 45.5	15.6	8.9	0.66
29	15 20.5	5 57 7.98	24 6 48.9	13.3	7.6	0.55	14	11 30.4	5 7 44.74	25 39 30.3	15.6	8.8	0.65
30	15 16.7	5 57 17.00	24 9 30.1	13.4	7.6	0.55	15	11 24.8	5 6 5.96	25 39 7.9	15.5	8.8	0.65
31	15 12.9	5 57 22.33	+24 12 12.9	13.5	7.7	0.56	16	11 19.2	5 4 28.78	+25 38 38.8	15.4	8.8	0.65
Nov. 1	15 9.0	5 57 23.93	24 14 57.4	13.6	7.7	0.56	17	11 13.7	5 2 53.38	25 38 3.2	15.4	8.8	0.64
2	15 5.1	5 57 21.74	24 17 43.5	13.7	7.8	0.57	18	11 8.2	5 1 19.97	25 37 21.7	15.3	8.7	0.64
3	15 1.0	5 57 15.75	24 20 31.1	13.8	7.8	0.57	19	11 2.8	4 59 48.69	25 36 34.8	15.2	8.7	0.63
4	14 56.9	5 57 5.92	24 23 20.2	13.9	7.9	0.58	20	10 57.4	4 58 19.71	25 35 42.9	15.1	8.6	0.63
5	14 52.7	5 56 52.23	+24 26 10.7	14.0	7.9	0.58	21	10 52.0	4 56 53.14	+25 34 46.4	15.0	8.6	0.63
6	14 48.5	5 56 34.67	24 29 2.3	14.1	8.0	0.59	22	10 46.7	4 55 29.14	25 33 45.8	14.9	8.5	0.62
7	14 44.2	5 56 13.23	24 31 54.8	14.2	8.0	0.59	23	10 41.4	4 54 7.83	25 32 41.7	14.8	8.5	0.62
8	14 39.9	5 55 47.91	24 34 48.1	14.3	8.1	0.60	24	10 36.2	4 52 49.36	25 31 34.5	14.7	8.4	0.62
9	14 35.5	5 55 18.73	24 37 42.1	14.4	8.1	0.60	25	10 31.0	4 51 33.81	25 30 24.8	14.6	8.4	0.61
10	14 31.0	5 54 45.70	+24 40 36.3	14.5	8.2	0.60	26	10 25.8	4 50 21.31	+25 29 13.2	14.5	8.3	0.61
11	14 26.5	5 54 8.82	24 43 30.6	14.5	8.2	0.61	27	10 20.7	4 49 11.96	25 28 0.2	14.4	8.2	0.61
12	14 21.8	5 53 28.11	24 46 24.8	14.6	8.3	0.61	28	10 15.7	4 48 5.84	25 26 46.3	14.3	8.2	0.60
13	14 17.2	5 52 43.61	24 49 18.4	14.7	8.4	0.62	29	10 10.8	4 47 3.04	25 25 32.0	14.2	8.1	0.60
14	14 12.4	5 51 55.38	24 52 11.0	14.8	8.4	0.62	30	10 5.9	4 46 3.62	25 24 17.9	14.1	8.0	0.59
15	14 7.6	5 51 3.44	+24 55 2.3	14.9	8.5	0.63	31	10 1.0	4 45 7.66	+25 23 4.3	14.0	7.9	0.59
16	14 2.8	5 50 7.82	+24 57 51.9	15.0	8.6	0.63	32	9 56.2	4 44 15.18	+25 21 51.8	13.9	7.9	0.58

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	13 56.6	8 38 25.38	+19 7 7.3	2.0	21.5	1.62	Feb. 15	10 32.2	8 14 46.41	+20 34 29.5	2.0	21.5	1.62
1	13 52.3	8 37 58.86	19 8 57.0	2.0	21.5	1.62	16	10 27.8	8 14 19.47	20 35 58.3	2.0	21.5	1.62
2	13 47.9	8 37 31.82	19 10 48.2	2.0	21.6	1.63	17	10 23.4	8 13 53.06	20 37 24.9	2.0	21.4	1.62
3	13 43.5	8 37 4.31	19 12 40.8	2.0	21.6	1.63	18	10 19.1	8 13 27.19	20 38 49.3	2.0	21.4	1.61
4	13 39.1	8 36 36.31	19 14 34.7	2.0	21.6	1.63	19	10 14.7	8 13 1.86	20 40 11.5	2.0	21.4	1.61
5	13 34.7	8 36 7.86	+19 16 29.9	2.0	21.7	1.63	20	10 10.4	8 12 37.12	+20 41 31.7	2.0	21.3	1.61
6	13 30.3	8 35 38.96	19 18 26.3	2.0	21.7	1.63	21	10 6.1	8 12 12.97	20 42 49.5	2.0	21.3	1.61
7	13 25.9	8 35 9.62	19 20 23.8	2.0	21.7	1.63	22	10 1.7	8 11 49.43	20 44 4.9	2.0	21.2	1.61
8	13 21.4	8 34 39.89	19 22 22.3	2.0	21.7	1.63	23	9 57.4	8 11 26.50	20 45 18.0	2.0	21.2	1.60
9	13 17.0	8 34 9.79	19 24 21.7	2.0	21.8	1.63	24	9 53.1	8 11 4.20	20 46 29.0	2.0	21.1	1.60
10	13 12.6	8 33 39.33	+19 26 22.0	2.0	21.8	1.63	25	9 48.8	8 10 42.53	+20 47 37.6	2.0	21.1	1.60
11	13 8.1	8 33 8.53	19 28 23.0	2.0	21.8	1.63	26	9 44.5	8 10 21.52	20 48 43.7	2.0	21.0	1.60
12	13 3.7	8 32 37.42	19 30 24.5	2.0	21.8	1.63	27	9 40.3	8 10 1.17	20 49 47.3	2.0	21.0	1.59
13	12 59.2	8 32 6.02	19 32 26.5	2.0	21.8	1.64	28	9 36.0	8 9 41.52	20 50 48.8	2.0	20.9	1.59
14	12 54.8	8 31 34.35	19 34 28.9	2.0	21.8	1.64	29	9 31.8	8 9 22.57	20 51 47.9	2.0	20.9	1.59
15	12 50.3	8 31 2.45	+19 36 31.7	2.1	21.9	1.64	Mar. 1	9 27.5	8 9 4.30	+20 52 44.5	2.0	20.9	1.59
16	12 45.8	8 30 30.32	19 38 34.7	2.1	21.9	1.64	2	9 23.3	8 8 46.74	20 53 38.6	2.0	20.8	1.58
17	12 41.4	8 29 57.99	19 40 37.7	2.1	21.9	1.64	3	9 19.1	8 8 29.92	20 54 30.4	1.9	20.8	1.58
18	12 36.9	8 29 25.49	19 42 40.9	2.1	21.9	1.65	4	9 14.9	8 8 13.82	20 55 19.7	1.9	20.8	1.58
19	12 32.4	8 28 52.87	19 44 43.9	2.1	21.9	1.65	5	9 10.7	8 7 58.45	20 56 6.6	1.9	20.7	1.57
20	12 27.9	8 28 20.13	+19 46 46.7	2.1	21.9	1.65	6	9 6.5	8 7 43.81	+20 56 51.0	1.9	20.7	1.57
21	12 23.5	8 27 47.29	19 48 49.2	2.1	21.9	1.65	7	9 2.4	8 7 29.93	20 57 33.0	1.9	20.6	1.56
22	12 19.0	8 27 14.38	19 50 51.4	2.1	21.9	1.65	8	8 58.2	8 7 16.81	20 58 12.5	1.9	20.6	1.56
23	12 14.5	8 26 41.44	19 52 53.2	2.1	21.9	1.65	9	8 54.1	8 7 4.46	20 58 49.5	1.9	20.5	1.55
24	12 10.0	8 26 8.49	19 54 54.4	2.1	21.9	1.65	10	8 50.0	8 6 52.89	20 59 23.9	1.9	20.5	1.55
25	12 5.5	8 25 35.53	+19 56 54.9	2.1	21.9	1.65	11	8 45.8	8 6 42.10	+20 59 55.9	1.9	20.4	1.55
26	12 1.0	8 25 2.59	19 58 54.7	2.1	21.9	1.65	12	8 41.7	8 6 32.10	21 0 25.4	1.9	20.3	1.54
27	11 56.6	8 24 29.72	20 0 53.8	2.1	21.9	1.65	13	8 37.7	8 6 22.88	21 0 52.5	1.9	20.3	1.54
28	11 52.1	8 23 56.93	20 2 52.0	2.1	21.9	1.65	14	8 33.6	8 6 14.46	21 1 17.1	1.9	20.2	1.54
29	11 47.6	8 23 24.24	20 4 49.1	2.1	21.9	1.65	15	8 29.5	8 6 6.84	21 1 39.0	1.9	20.1	1.53
30	11 43.1	8 22 51.68	+20 6 45.3	2.1	21.9	1.65	16	8 25.5	8 6 0.02	+21 1 58.5	1.9	20.1	1.53
31	11 38.7	8 22 19.27	20 8 40.4	2.1	21.9	1.65	17	8 21.5	8 5 54.00	21 2 15.5	1.9	20.0	1.52
Feb. 1	11 34.2	8 21 47.02	20 10 34.4	2.1	21.8	1.65	18	8 17.4	8 5 48.79	21 2 30.2	1.9	19.9	1.52
2	11 29.7	8 21 14.97	20 12 27.1	2.0	21.8	1.65	19	8 13.4	8 5 44.39	21 2 42.2	1.8	19.9	1.51
3	11 25.3	8 20 43.13	20 14 18.4	2.0	21.8	1.65	20	8 9.4	8 5 40.79	21 2 51.8	1.8	19.8	1.51
4	11 20.8	8 20 11.53	+20 16 8.3	2.0	21.8	1.65	21	8 5.5	8 5 38.00	+21 2 58.9	1.8	19.8	1.50
5	11 16.4	8 19 40.20	20 17 56.8	2.0	21.8	1.64	22	8 1.5	8 5 36.01	21 3 3.5	1.8	19.7	1.50
6	11 11.9	8 19 9.16	20 19 43.9	2.0	21.7	1.64	23	7 57.5	8 5 34.83	21 3 5.6	1.8	19.6	1.49
7	11 7.5	8 18 38.44	20 21 29.4	2.0	21.7	1.64	24	7 53.6	8 5 34.44	21 3 5.4	1.8	19.6	1.49
8	11 3.1	8 18 8.04	20 23 13.4	2.0	21.7	1.64	25	7 49.7	8 5 34.85	21 3 2.7	1.8	19.5	1.48
9	10 58.6	8 17 38.00	+20 24 55.6	2.0	21.7	1.64	26	7 45.8	8 5 36.07	+21 2 57.7	1.8	19.5	1.48
10	10 54.2	8 17 8.33	20 26 35.9	2.0	21.7	1.64	27	7 41.9	8 5 38.07	21 2 50.3	1.8	19.4	1.47
11	10 49.8	8 16 39.06	20 28 14.4	2.0	21.6	1.63	28	7 38.0	8 5 40.87	21 2 40.4	1.8	19.4	1.47
12	10 45.4	8 16 10.22	20 29 51.2	2.0	21.6	1.63	29	7 34.1	8 5 44.45	21 2 28.2	1.8	19.3	1.46
13	10 41.0	8 15 41.81	20 31 26.0	2.0	21.6	1.63	30	7 30.2	8 5 48.82	21 2 13.5	1.8	19.3	1.46
14	10 36.6	8 15 13.86	+20 32 58.8	2.0	21.6	1.62	31	7 26.4	8 5 53.97	+21 1 56.5	1.8	19.2	1.45
15	10 32.2	8 14 46.41	+20 34 29.5	2.0	21.5	1.62	Apr. 1	7 22.6	8 5 59.89	+21 1 37.1	1.8	19.1	1.45

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	7 22.6	8 5 59.89	+21 1 37.1	1.8	19.1	1.45	Nov. 16	18 52.0	10 40 8.45	+9 27 25.4	1.6	17.1	1.23
2	7 18.8	8 6 6.58	21 1 15.4	1.8	19.0	1.45	17	18 48.4	10 40 33.51	9 25 10.9	1.6	17.1	1.23
3	7 14.9	8 6 14.05	21 0 51.3	1.8	18.9	1.44	18	18 44.9	10 40 58.01	9 22 59.7	1.6	17.2	1.24
4	7 11.1	8 6 22.28	21 0 24.8	1.8	18.9	1.44	19	18 41.4	10 41 21.95	9 20 51.9	1.6	17.2	1.24
5	7 7.4	8 6 31.27	20 59 56.0	1.8	18.8	1.44	20	18 37.8	10 41 45.32	9 18 47.5	1.6	17.3	1.25
6	7 3.6	8 6 41.03	+20 59 25.0	1.8	18.8	1.43	21	18 34.3	10 42 8.12	+9 16 46.4	1.6	17.3	1.25
7	6 59.9	8 6 51.54	20 58 51.7	1.8	18.7	1.43	22	18 30.7	10 42 30.34	9 14 48.7	1.6	17.4	1.25
8	6 56.1	8 7 2.82	20 58 16.1	1.8	18.7	1.42	23	18 27.2	10 42 51.97	9 12 54.6	1.6	17.4	1.25
9	6 52.4	8 7 14.84	20 57 38.0	1.8	18.6	1.42	24	18 23.6	10 43 13.01	9 11 4.1	1.7	17.5	1.26
10	6 48.7	8 7 27.60	20 56 57.7	1.8	18.6	1.41	25	18 20.0	10 43 33.45	9 9 17.3	1.7	17.5	1.26
11	6 44.9	8 7 41.08	+20 56 15.1	1.8	18.5	1.41	26	18 16.4	10 43 53.29	+9 7 34.2	1.7	17.6	1.26
12	6 41.2	8 7 55.31	20 55 30.1	1.8	18.4	1.40	27	18 12.8	10 44 12.51	9 5 54.8	1.7	17.6	1.26
13	6 37.6	8 8 10.24	20 54 42.9	1.7	18.4	1.40	28	18 9.2	10 44 31.12	9 4 19.0	1.7	17.7	1.26
14	6 33.9	8 8 25.89	20 53 53.5	1.7	18.3	1.39	29	18 5.5	10 44 49.11	9 2 46.9	1.7	17.7	1.27
15	6 30.2	8 8 42.27	20 53 1.7	1.7	18.3	1.39	30	18 1.9	10 45 6.45	9 1 18.8	1.7	17.8	1.27
16	6 26.6	8 8 59.35	+20 52 7.7	1.7	18.2	1.38	Dec. 1	17 58.2	10 45 23.15	+8 59 54.6	1.7	17.8	1.28
17	6 22.9	8 9 17.11	20 51 11.5	1.7	18.2	1.38	2	17 54.6	10 45 39.21	8 58 34.3	1.7	17.9	1.28
18	6 19.3	8 9 35.57	20 50 13.1	1.7	18.1	1.38	3	17 50.9	10 45 54.62	8 57 18.1	1.7	17.9	1.29
19	6 15.7	8 9 54.71	20 49 12.4	1.7	18.1	1.37	4	17 47.2	10 46 9.37	8 56 5.8	1.7	18.0	1.29
20	6 12.1	8 10 14.52	20 48 9.6	1.7	18.0	1.37	5	17 43.5	10 46 23.47	8 54 57.5	1.7	18.0	1.29
21	6 8.5	8 10 35.00	+20 47 4.5	1.7	18.0	1.37	6	17 39.8	10 46 36.90	+8 53 53.4	1.7	18.1	1.30
22	6 4.9	8 10 56.13	20 45 57.2	1.7	17.9	1.36	7	17 36.1	10 46 49.66	8 52 53.3	1.7	18.2	1.30
23	6 1.3	8 11 17.92	20 44 47.9	1.7	17.9	1.36	8	17 32.3	10 47 1.74	8 51 57.3	1.7	18.2	1.30
24	5 57.8	8 11 40.34	20 43 36.3	1.7	17.8	1.35	9	17 28.6	10 47 13.13	8 51 5.5	1.7	18.3	1.31
25	5 54.2	8 12 3.39	20 42 22.7	1.7	17.8	1.35	10	17 24.8	10 47 23.84	8 50 18.0	1.7	18.4	1.31
26	5 50.7	8 12 27.08	+20 41 6.9	1.7	17.8	1.34	11	17 21.1	10 47 33.88	+8 49 34.6	1.7	18.4	1.32
27	5 47.2	8 12 51.39	20 39 48.9	1.7	17.8	1.34	12	17 17.3	10 47 43.22	8 48 55.4	1.7	18.5	1.32
28	5 43.7	8 13 16.31	20 38 28.9	1.7	17.7	1.34	13	17 13.5	10 47 51.87	8 48 20.5	1.7	18.5	1.33
29	5 40.2	8 13 41.82	20 37 6.7	1.6	17.7	1.33	14	17 9.7	10 47 59.82	8 47 49.8	1.7	18.6	1.33
30	5 36.7	8 14 7.91	+20 35 42.4	1.6	17.7	1.33	15	17 5.9	10 48 7.08	8 47 23.4	1.7	18.6	1.34
Nov. 1	19 43.7	10 32 50.16	+10 7 8.7	1.6	16.5	1.19	16	17 2.1	10 48 13.64	+8 47 1.2	1.8	18.7	1.34
2	19 40.3	10 33 22.81	10 4 10.0	1.6	16.5	1.19	17	16 58.2	10 48 19.48	8 46 43.3	1.8	18.7	1.35
3	19 36.9	10 33 55.00	10 1 14.0	1.6	16.5	1.19	18	16 54.4	10 48 24.61	8 46 29.8	1.8	18.8	1.35
4	19 33.5	10 34 26.72	9 58 20.7	1.6	16.6	1.19	19	16 50.6	10 48 29.04	8 46 20.6	1.8	18.8	1.36
5	19 30.1	10 34 57.97	9 55 30.0	1.6	16.6	1.20	20	16 46.7	10 48 32.75	8 46 15.7	1.8	18.9	1.36
6	19 26.6	10 35 28.75	+ 9 52 42.1	1.6	16.6	1.20	21	16 42.8	10 48 35.75	+8 46 15.2	1.8	18.9	1.36
7	19 23.2	10 35 59.03	9 49 57.0	1.6	16.7	1.20	22	16 38.9	10 48 38.03	8 46 19.1	1.8	19.0	1.37
8	19 19.8	10 36 28.81	9 47 14.9	1.6	16.7	1.20	23	16 35.0	10 48 39.60	8 46 27.4	1.8	19.1	1.37
9	19 16.3	10 36 58.09	9 44 35.5	1.6	16.7	1.21	24	16 31.1	10 48 40.44	8 46 40.0	1.8	19.1	1.37
10	19 12.9	10 37 26.86	9 41 59.2	1.6	16.8	1.21	25	16 27.2	10 48 40.55	8 46 57.0	1.8	19.2	1.38
11	19 9.4	10 37 55.11	+ 9 39 25.9	1.6	16.8	1.21	26	16 23.2	10 48 39.94	+8 47 18.4	1.8	19.3	1.38
12	19 5.9	10 38 22.84	9 36 55.6	1.6	16.9	1.22	27	16 19.3	10 48 38.60	8 47 44.3	1.8	19.3	1.38
13	19 2.5	10 38 50.05	9 34 28.2	1.6	16.9	1.22	28	16 15.3	10 48 36.52	8 48 14.5	1.8	19.4	1.39
14	18 59.0	10 39 16.72	9 32 4.1	1.6	17.0	1.22	29	16 11.3	10 48 33.72	8 48 49.1	1.8	19.4	1.39
15	18 55.4	10 39 42.85	9 29 43.2	1.6	17.0	1.22	30	16 7.3	10 48 30.19	8 [illegible]8.2	1.8	19.5	1.40
16	18 52.0	10 40 8.45	+ 9 27 25.4	1.6	17.1	1.23	31	16 3.3	10 48 25.94	+8 50 11.7	1.8	19.5	1.40
17	18 48.4	10 40 33.51	+ 9 25 10.9	1.6	17.1	1.23	32	15 59.3	10 48 20.95	+8 50 59.6	1.9	19.6	1.40

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Feb. 1	18 18.5	15 7 11.93	−15 7 51.5	0.9	7.9	0.58	Mar. 17	15 22.4	15 8 0.68	−15 1 29.4	1.0	8.5	0.62
2	18 14.8	15 7 21.84	15 8 19.1	0.9	7.9	0.58	18	15 18.3	15 7 52.66	15 0 45.5	1.0	8.5	0.62
3	18 11.0	15 7 31.38	15 8 45.0	0.9	7.9	0.58	19	15 14.3	15 7 44.28	15 0 0.3	1.0	8.5	0.62
4	18 7.2	15 7 40.53	15 9 9.4	0.9	7.9	0.58	20	15 10.2	15 7 35.55	14 59 13.8	1.0	8.6	0.62
5	18 3.4	15 7 49.29	15 9 32.1	0.9	7.9	0.58	21	15 6.1	15 7 26.47	14 58 26.0	1.0	8.6	0.63
6	17 59.6	15 7 57.66	−15 9 53.1	0.9	7.9	0.58	22	15 2.0	15 7 17.04	−14 57 36.9	1.0	8.6	0.63
7	17 55.8	15 8 5.63	15 10 12.4	0.9	7.9	0.58	23	14 57.9	15 7 7.27	14 56 46.6	1.0	8.6	0.63
8	17 52.0	15 8 13.20	15 10 30.0	0.9	7.9	0.59	24	14 53.8	15 6 57.17	14 55 55.1	1.0	8.6	0.63
9	17 48.2	15 8 20.37	15 10 45.9	0.9	8.0	0.59	25	14 49.7	15 6 46.74	14 55 2.4	1.0	8.6	0.63
10	17 44.4	15 8 27.15	15 11 0.2	0.9	8.0	0.59	26	14 45.6	15 6 35.98	14 54 8.5	1.0	8.6	0.63
11	17 40.6	15 8 33.53	−15 11 12.7	0.9	8.0	0.59	27	14 41.5	15 6 24.90	−14 53 13.5	1.0	8.6	0.63
12	17 36.7	15 8 39.50	15 11 23.5	0.9	8.0	0.59	28	14 37.4	15 6 13.52	14 52 17.3	1.0	8.6	0.64
13	17 32.9	15 8 45.05	15 11 32.7	0.9	8.0	0.59	29	14 33.2	15 6 1.83	14 51 20.1	1.0	8.6	0.64
14	17 29.1	15 8 50.20	15 11 40.1	0.9	8.0	0.59	30	14 29.1	15 5 49.82	14 50 21.7	1.0	8.6	0.64
15	17 25.2	15 8 54.95	15 11 45.9	0.9	8.0	0.59	31	14 25.0	15 5 37.52	14 49 22.4	1.0	8.6	0.64
16	17 21.3	15 8 59.29	−15 11 50.0	0.9	8.0	0.60	Apr. 1	14 20.8	15 5 24.93	−14 48 22.0	1.0	8.6	0.64
17	17 17.5	15 9 3.21	15 11 52.5	0.9	8.1	0.60	2	14 16.7	15 5 12.06	14 47 20.6	1.0	8.6	0.64
18	17 13.6	15 9 6.73	15 11 53.3	0.9	8.1	0.60	3	14 12.6	15 4 58.91	14 46 18.2	1.0	8.6	0.64
19	17 9.7	15 9 9.83	15 11 52.4	0.9	8.1	0.60	4	14 8.4	15 4 45.49	14 45 14.8	1.0	8.7	0.64
20	17 5.8	15 9 12.52	15 11 49.9	0.9	8.1	0.60	5	14 4.2	15 4 31.81	14 44 10.6	1.0	8.7	0.64
21	17 1.9	15 9 14.81	−15 11 45.7	0.9	8.1	0.60	6	14 0.1	15 4 17.86	14 43 5.4	1.0	8.7	0.64
22	16 58.0	15 9 16.68	15 11 40.0	0.9	8.1	0.60	7	13 55.9	15 4 3.65	14 41 59.4	1.0	8.7	0.64
23	16 54.1	15 9 18.14	15 11 32.6	0.9	8.1	0.60	8	13 51.7	15 3 49.21	14 40 52.4	1.0	8.7	0.64
24	16 50.2	15 9 19.20	15 11 23.5	0.9	8.2	0.60	9	13 47.5	15 3 34.52	14 39 44.8	1.0	8.7	0.64
25	16 46.3	15 9 19.85	15 11 12.8	0.9	8.2	0.61	10	13 43.4	15 3 19.61	14 38 36.4	1.0	8.7	0.64
26	16 42.4	15 9 20.08	−15 11 0.5	0.9	8.2	0.61	11	13 39.2	15 3 4.48	−14 37 27.2	1.0	8.7	0.64
27	16 38.4	15 9 19.91	15 10 46.6	0.9	8.2	0.61	12	13 35.0	15 2 49.13	14 36 17.4	1.0	8.7	0.64
28	16 34.5	15 9 19.33	15 10 31.1	0.9	8.2	0.61	13	13 30.8	15 2 33.58	14 35 6.9	1.0	8.7	0.64
29	16 30.5	15 9 18.34	15 10 14.0	0.9	8.2	0.61	14	13 26.6	15 2 17.84	14 33 55.8	1.0	8.7	0.64
Mar. 1	16 26.6	15 9 16.95	15 9 55.4	0.9	8.3	0.61	15	13 22.4	15 2 1.91	14 32 44.1	1.0	8.7	0.64
2	16 22.6	15 9 15.16	−15 9 35.2	0.9	8.3	0.61	16	13 18.2	15 1 45.80	−14 31 31.8	1.0	8.7	0.64
3	16 18.7	15 9 12.96	15 9 13.4	0.9	8.3	0.61	17	13 14.0	15 1 29.52	14 30 19.1	1.0	8.7	0.64
4	16 14.7	15 9 10.36	15 8 50.1	0.9	8.3	0.61	18	13 9.8	15 1 13.07	14 29 5.9	1.0	8.7	0.64
5	16 10.7	15 9 7.35	15 8 25.1	0.9	8.3	0.62	19	13 5.6	15 0 56.47	14 27 52.2	1.0	8.7	0.64
6	16 6.7	15 9 3.95	15 7 58.7	0.9	8.4	0.62	20	13 1.4	15 0 39.73	14 26 38.2	1.0	8.8	0.64
7	16 2.7	15 9 0.14	−15 7 30.7	0.9	8.4	0.62	21	12 57.2	15 0 22.85	−14 25 23.8	1.0	8.8	0.64
8	15 58.7	15 8 55.94	15 7 1.2	0.9	8.4	0.62	22	12 53.0	15 0 5.85	14 24 9.1	1.0	8.8	0.65
9	15 54.7	15 8 51.34	15 6 30.2	0.9	8.4	0.62	23	12 48.8	14 59 48.75	14 22 54.1	1.0	8.8	0.65
10	15 50.7	15 8 46.35	15 5 57.7	0.9	8.4	0.62	24	12 44.5	14 59 31.55	14 21 38.9	1.0	8.8	0.65
11	15 46.7	15 8 40.98	15 5 23.7	0.9	8.5	0.62	25	12 40.3	14 59 14.24	14 20 23.5	1.0	8.8	0.65
12	15 42.7	15 8 35.22	−15 4 48.2	1.0	8.5	0.62	26	12 36.1	14 58 56.82	−14 19 7.8	1.0	8.8	0.65
13	15 38.6	15 8 29.07	15 4 11.3	1.0	8.5	0.62	27	12 31.9	14 58 39.31	14 17 51.9	1.0	8.8	0.65
14	15 34.6	15 8 22.53	15 3 32.9	1.0	8.5	0.62	28	12 27.6	14 58 21.75	14 16 36.0	1.0	8.8	0.65
15	15 30.5	15 8 15.62	15 2 53.1	1.0	8.5	0.62	29	12 23.4	14 58 4.12	14 15 20.1	1.0	8.8	0.65
16	15 26.5	15 8 8.34	15 2 11.9	1.0	8.5	0.62	30	12 19.2	14 57 46.43	14 14 4.1	1.0	8.8	0.65
17	15 22.4	15 8 0.68	−15 1 29.4	1.0	8.5	0.62	May 1	12 15.0	14 57 28.70	−14 12 48.2	1.0	8.8	0.65
18	15 18.3	15 7 52.66	−15 0 45.5	1.0	8.5	0.62	2	12 10.8	14 57 10.92	−14 11 32.3	1.0	8.8	0.65

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
May 1	12 15.0	14 57 28.70	−14 12 48.2	1.0	8.8	0.65
2	12 10.8	14 57 10.92	14 11 32.3	1.0	8.8	0.65
3	12 6.6	14 56 53.12	14 10 16.5	1.0	8.8	0.65
4	12 2.3	14 56 35.31	14 9 0.8	1.0	8.8	0.65
5	11 58.1	14 56 17.50	14 7 45.2	1.0	8.8	0.65
6	11 53.9	14 55 59.69	−14 6 29.8	1.0	8.8	0.65
7	11 49.6	14 55 41.88	14 5 14.8	1.0	8.8	0.65
8	11 45.4	14 55 24.07	14 4 0.0	1.0	8.8	0.65
9	11 41.2	14 55 6.27	14 2 45.4	1.0	8.8	0.65
10	11 37.0	14 54 48.52	14 1 31.2	1.0	8.8	0.65
11	11 32.7	14 54 30.82	−14 0 17.5	1.0	8.8	0.65
12	11 28.5	14 54 13.17	13 59 4.2	1.0	8.8	0.65
13	11 24.3	14 53 55.58	13 57 51.5	1.0	8.8	0.65
14	11 20.1	14 53 38.07	13 56 39.3	1.0	8.8	0.64
15	11 15.8	14 53 20.64	13 55 27.7	1.0	8.8	0.64
16	11 11.6	14 53 3.30	−13 54 16.6	1.0	8.8	0.64
17	11 7.4	14 52 46.08	13 53 6.3	1.0	8.8	0.64
18	11 3.2	14 52 28.96	13 51 56.7	1.0	8.8	0.64
19	10 59.0	14 52 11.95	13 50 47.8	1.0	8.8	0.64
20	10 54.7	14 51 55.07	13 49 39.7	1.0	8.8	0.64
21	10 50.5	14 51 38.33	−13 48 32.3	1.0	8.7	0.64
22	10 46.3	14 51 21.74	13 47 25.9	1.0	8.7	0.64
23	10 42.1	14 51 5.30	13 46 20.3	1.0	8.7	0.64
24	10 37.9	14 50 49.01	13 45 15.6	1.0	8.7	0.64
25	10 33.7	14 50 32.87	13 44 11.9	1.0	8.7	0.64
26	10 29.5	14 50 16.92	−13 43 9.0	1.0	8.7	0.64
27	10 25.3	14 50 1.16	13 42 7.2	1.0	8.7	0.64
28	10 21.1	14 49 45.58	13 41 6.4	1.0	8.7	0.64
29	10 16.9	14 49 30.19	13 40 6.6	1.0	8.7	0.64
30	10 12.7	14 49 14.99	13 39 7.9	1.0	8.7	0.64
31	10 8.6	14 49 0.00	−13 38 10.3	1.0	8.7	0.64
June 1	10 4.4	14 48 45.24	13 37 14.0	1.0	8.7	0.64
2	10 0.2	14 48 30.71	13 36 18.9	1.0	8.7	0.64
3	9 56.0	14 48 16.39	13 35 25.0	1.0	8.7	0.64
4	9 51.9	14 48 2.31	13 34 32.3	1.0	8.7	0.64
5	9 47.7	14 47 48.48	−13 33 40.8	1.0	8.7	0.64
6	9 43.6	14 47 34.90	13 32 50.7	1.0	8.7	0.64
7	9 39.4	14 47 21.58	13 32 1.9	1.0	8.6	0.64
8	9 35.2	14 47 8.51	13 31 14.5	1.0	8.6	0.63
9	9 31.1	14 46 55.71	13 30 28.5	1.0	8.6	0.63
10	9 27.0	14 46 43.18	−13 29 43.8	1.0	8.6	0.63
11	9 22.8	14 46 30.95	13 29 0.6	1.0	8.6	0.63
12	9 18.7	14 46 19.00	13 28 19.0	1.0	8.6	0.63
13	9 14.6	14 46 7.34	13 27 38.8	1.0	8.6	0.63
14	9 10.5	14 45 55.98	13 27 0.1	1.0	8.6	0.63
15	9 6.3	14 45 44.92	−13 26 22.9	1.0	8.6	0.63
16	9 2.2	14 45 34.17	−13 25 47.4	1.0	8.5	0.63

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam
	h m	h m s	° ′ ″	″	″
June 15	9 6.3	14 45 44.92	−13 26 22.9	1.0	8.
16	9 2.2	14 45 34.17	13 25 47.4	1.0	8.
17	8 58.1	14 45 23.74	13 25 13.4	1.0	8.
18	8 54.0	14 45 13.63	13 24 41.0	1.0	8.
19	8 49.9	14 45 3.84	13 24 10.2	1.0	8.
20	8 45.8	14 44 54.38	−13 23 41.0	1.0	8.
21	8 41.8	14 44 45.24	13 23 13.5	1.0	8.
22	8 37.7	14 44 36.43	13 22 47.6	1.0	8.
23	8 33.6	14 44 27.96	13 22 23.4	1.0	8.4
24	8 29.5	14 44 19.83	13 22 0.8	1.0	8.4
25	8 25.5	14 44 12.03	−13 21 39.9	1.0	8.4
26	8 21.4	14 44 4.56	13 21 20.6	1.0	8.4
27	8 17.4	14 43 57.44	13 21 3.1	1.0	8.4
28	8 13.3	14 43 50.68	13 20 47.3	1.0	8.4
29	8 9.3	14 43 44.28	13 20 33.2	1.0	8.4
30	8 5.3	14 43 38.24	−13 20 20.8	1.0	8.4
July 1	8 1.2	14 43 32.54	13 20 10.2	0.9	8.3
2	7 57.2	14 43 27.21	13 20 1.4	0.9	8.3
3	7 53.2	14 43 22.25	13 19 54.3	0.9	8.3
4	7 49.2	14 43 17.64	13 19 49.0	0.9	8.3
5	7 45.2	14 43 13.40	−13 19 45.5	0.9	8.3
6	7 41.2	14 43 9.54	13 19 43.8	0.9	8.3
7	7 37.2	14 43 6.05	13 19 43.9	0.9	8.3
8	7 33.2	14 43 2.93	13 19 45.8	0.9	8.3
9	7 29.2	14 43 0.19	13 19 49.5	0.9	8.3
10	7 25.3	14 42 57.83	−13 19 55.0	0.9	8.2
11	7 21.3	14 42 55.84	13 20 2.3	0.9	8.2
12	7 17.4	14 42 54.23	13 20 11.3	0.9	8.2
13	7 13.4	14 42 53.01	13 20 22.2	0.9	8.2
14	7 9.5	14 42 52.16	13 20 34.9	0.9	8.2
15	7 5.5	14 42 51.69	−13 20 49.4	0.9	8.2
16	7 1.6	14 42 51.61	13 21 5.7	0.9	8.2
17	6 57.6	14 42 51.92	13 21 23.7	0.9	8.2
18	6 53.7	14 42 52.61	13 21 43.6	0.9	8.1
19	6 49.8	14 42 53.68	13 22 5.2	0.9	8.1
20	6 45.9	14 42 55.12	−13 22 28.6	0.9	8.1
21	6 42.0	14 42 56.94	13 22 53.7	0.9	8.1
22	6 38.1	14 42 59.14	13 23 20.5	0.9	8.1
23	6 34.2	14 43 1.73	13 23 49.2	0.9	8.1
24	6 30.3	14 43 4.70	13 24 19.6	0.9	8.1
25	6 26.5	14 43 8.03	−13 24 51.7	0.9	8.1
26	6 22.6	14 43 11.74	13 25 25.5	0.9	8.
27	6 18.7	14 43 15.83	13 26 1.0	0.9	8.
28	6 14.9	14 43 20.29	13 26 38.2	0.9	8.
29	6 11.0	14 43 25.13	13 27 17.1	0.9	8.
30	6 7.2	14 43 30.34	−13 27 57.7	0.9	8.
31	6 3.4	14 43 35.93	−13 28 40.0	0.9	8.

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
eb. 1	18 38.9	15 27 39.18	−18 33 18.7	0.5	1.8	0.12	Mar. 17	15 42.5	15 28 9.81	−18 34 51.7	0.5	1.8	0.13
2	18 35.1	15 27 44.69	18 33 38.1	0.5	1.8	0.12	18	15 38.5	15 28 5.56	18 34 36.1	0.5	1.9	0.13
3	18 31.2	15 27 49.99	18 33 56.8	0.5	1.8	0.12	19	15 34.5	15 28 1.12	18 34 19.8	0.5	1.9	0.13
4	18 27.4	15 27 55.06	18 34 14.7	0.5	1.8	0.12	20	15 30.5	15 27 56.48	18 34 3.0	0.5	1.9	0.13
5	18 23.5	15 27 59.93	18 34 31.8	0.5	1.8	0.13	21	15 26.5	15 27 51.66	18 33 45.4	0.5	1.9	0.13
6	18 19.7	15 28 4.57	−18 34 48.1	0.5	1.8	0.13	22	15 22.4	15 27 46.66	−18 33 27.2	0.5	1.9	0.13
7	18 15.8	15 28 9.00	18 35 3.5	0.5	1.8	0.13	23	15 18.4	15 27 41.46	18 33 8.4	0.5	1.9	0.13
8	18 12.0	15 28 13.20	18 35 18.2	0.5	1.8	0.13	24	15 14.4	15 27 36.09	18 32 48.9	0.5	1.9	0.13
9	18 8.1	15 28 17.18	18 35 32.1	0.5	1.8	0.13	25	15 10.4	15 27 30.54	18 32 28.7	0.5	1.9	0.13
10	18 4.2	15 28 20.95	18 35 45.2	0.5	1.8	0.13	26	15 6.4	15 27 24.80	18 32 7.7	0.5	1.9	0.13
11	18 0.4	15 28 24.50	−18 35 57.5	0.5	1.8	0.13	27	15 2.3	15 27 18.90	−18 31 46.2	0.5	1.9	0.13
12	17 56.5	15 28 27.82	18 36 9.0	0.5	1.8	0.13	28	14 58.3	15 27 12.82	18 31 24.1	0.5	1.9	0.13
13	17 52.6	15 28 30.92	18 36 19.7	0.5	1.8	0.13	29	14 54.3	15 27 6.58	18 31 1.4	0.5	1.9	0.13
14	17 48.7	15 28 33.80	18 36 29.6	0.5	1.8	0.13	30	14 50.3	15 27 0.16	18 30 38.1	0.5	1.9	0.13
15	17 44.8	15 28 36.47	18 36 38.7	0.5	1.8	0.13	31	14 46.2	15 26 53.57	18 30 14.2	0.5	1.9	0.13
16	17 40.9	15 28 38.90	−18 36 47.0	0.5	1.8	0.13	Apr. 1	14 42.1	15 26 46.83	−18 29 49.7	0.5	1.9	0.13
17	17 37.0	15 28 41.10	18 36 54.6	0.5	1.8	0.13	2	14 38.1	15 26 39.92	18 29 24.5	0.5	1.9	0.13
18	17 33.1	15 28 43.10	18 37 1.3	0.5	1.8	0.13	3	14 34.0	15 26 32.86	18 28 58.8	0.5	1.9	0.13
19	17 29.2	15 28 44.87	18 37 7.1	0.5	1.8	0.13	4	14 30.0	15 26 25.65	18 28 32.5	0.5	1.9	0.13
20	17 25.3	15 28 46.41	18 37 12.2	0.5	1.8	0.13	5	14 25.9	15 26 18.29	18 28 5.6	0.5	1.9	0.13
21	17 21.4	15 28 47.73	−18 37 16.6	0.5	1.8	0.13	6	14 21.9	15 26 10.78	−18 27 38.3	0.5	1.9	0.13
22	17 17.5	15 28 48.83	18 37 20.1	0.5	1.8	0.13	7	14 17.8	15 26 3.12	18 27 10.4	0.5	1.9	0.13
23	17 13.6	15 28 49.71	18 37 22.8	0.5	1.8	0.13	8	14 13.8	15 25 55.32	18 26 42.1	0.5	1.9	0.13
24	17 9.7	15 28 50.37	18 37 24.7	0.5	1.8	0.13	9	14 9.7	15 25 47.39	18 26 13.2	0.5	1.9	0.13
25	17 5.8	15 28 50.81	18 37 25.8	0.5	1.8	0.13	10	14 5.6	15 25 39.33	18 25 43.7	0.5	1.9	0.13
26	17 1.8	15 28 51.01	−18 37 26.1	0.5	1.8	0.13	11	14 1.6	15 25 31.14	−18 25 13.8	0.5	1.9	0.13
27	16 57.9	15 28 51.00	18 37 25.7	0.5	1.8	0.13	12	13 57.5	15 25 22.82	18 24 43.4	0.5	1.9	0.13
28	16 54.0	15 28 50.76	18 37 24.5	0.5	1.8	0.13	13	13 53.4	15 25 14.38	18 24 12.6	0.5	1.9	0.13
29	16 50.0	15 28 50.31	18 37 22.5	0.5	1.8	0.13	14	13 49.4	15 25 5.81	18 23 41.3	0.5	1.9	0.13
Mar. 1	16 46.1	15 28 49.64	18 37 19.7	0.5	1.8	0.13	15	13 45.3	15 24 57.12	18 23 9.5	0.5	1.9	0.13
2	16 42.1	15 28 48.76	−18 37 16.2	0.5	1.8	0.13	16	13 41.2	15 24 48.33	−18 22 37.4	0.5	1.9	0.13
3	16 38.2	15 28 47.65	18 37 11.9	0.5	1.8	0.13	17	13 37.1	15 24 39.44	18 22 5.0	0.5	1.9	0.13
4	16 34.2	15 28 46.33	18 37 6.8	0.5	1.8	0.13	18	13 33.0	15 24 30.45	18 21 32.2	0.5	1.9	0.13
5	16 30.3	15 28 44.79	18 37 0.9	0.5	1.8	0.13	19	13 29.0	15 24 21.35	18 20 59.0	0.5	1.9	0.13
6	16 26.3	15 28 43.03	18 36 54.3	0.5	1.8	0.13	20	13 24.9	15 24 12.16	18 20 25.3	0.5	1.9	0.13
7	16 22.3	15 28 41.06	−18 36 46.9	0.5	1.8	0.13	21	13 20.8	15 24 2.88	−18 19 51.4	0.5	1.9	0.13
8	16 18.4	15 28 38.88	18 36 38.7	0.5	1.8	0.13	22	13 16.7	15 23 53.52	18 19 17.2	0.5	1.9	0.13
9	16 14.4	15 28 36.48	18 36 29.8	0.5	1.8	0.13	23	13 12.6	15 23 44.08	18 18 42.6	0.5	1.9	0.13
10	16 10.4	15 28 33.87	18 36 20.1	0.5	1.8	0.13	24	13 8.5	15 23 34.55	18 18 7.7	0.5	1.9	0.13
11	16 6.5	15 28 31.05	18 36 9.6	0.5	1.8	0.13	25	13 4.4	15 23 24.96	18 17 32.5	0.5	1.9	0.13
12	16 2.5	15 28 28.03	−18 35 58.4	0.5	1.8	0.13	26	13 0.3	15 23 15.29	−18 16 57.0	0.5	1.9	0.13
13	15 58.5	15 28 24.80	18 35 46.5	0.5	1.8	0.13	27	12 56.2	15 23 5.56	18 16 21.3	0.5	1.9	0.13
14	15 54.5	15 28 21.36	18 35 33.8	0.5	1.8	0.13	28	12 52.1	15 22 55.76	18 15 45.4	0.5	1.9	0.13
15	15 50.5	15 28 17.71	18 35 20.5	0.5	1.8	0.13	29	12 48.0	15 22 45.91	18 15 9.2	0.5	1.9	0.13
16	15 46.5	15 28 13.86	18 35 6.5	0.5	1.8	0.13	30	12 43.9	15 22 36.01	18 14 32.7	0.5	1.9	0.13
17	15 42.5	15 28 9.81	−18 34 51.7	0.5	1.8	0.13	May 1	12 39.8	15 22 26.05	−18 13 56.0	0.5	1.9	0.13
18	15 38.5	15 28 5.56	−18 34 36.1	0.5	1.9	0.13	2	12 35.8	15 22 16.05	−18 13 19.2	0.5	1.9	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
May 1	12 39.8	15 22 26.05	−18 13 56.0	0.5	1.9	0.13	June 15	9 35.8	15 15 15.54	−17 47 15.5	0.5	1.9	0.13
2	12 35.8	15 22 16.05	18 13 19.2	0.5	1.9	0.13	16	9 31.7	15 15 7.82	17 46 46.7	0.5	1.9	0.13
3	12 31.7	15 22 6.01	18 12 42.3	0.5	1.9	0.13	17	9 27.6	15 15 0.23	17 46 18.4	0.5	1.9	0.13
4	12 27.6	15 21 55.93	18 12 5.1	0.5	1.9	0.13	18	9 23.6	15 14 52.78	17 45 50.6	0.5	1.9	0.13
5	12 23.5	15 21 45.82	18 11 27.7	0.5	1.9	0.13	19	9 19.5	15 14 45.47	17 45 23.4	0.5	1.9	0.13
6	12 19.4	15 21 35.67	−18 10 50.2	0.5	1.9	0.13	20	9 15.5	15 14 38.31	−17 44 56.7	0.5	1.9	0.13
7	12 15.3	15 21 25.51	18 10 12.6	0.5	1.9	0.13	21	9 11.4	15 14 31.30	17 44 30.7	0.5	1.9	0.13
8	12 11.2	15 21 15.32	18 9 35.0	0.5	1.9	0.13	22	9 7.4	15 14 24.44	17 44 5.2	0.5	1.9	0.13
9	12 7.1	15 21 5.12	18 8 57.3	0.5	1.9	0.13	23	9 3.4	15 14 17.73	17 43 40.3	0.5	1.9	0.13
10	12 3.0	15 20 54.90	18 8 19.5	0.5	1.9	0.13	24	8 59.3	15 14 11.18	17 43 16.0	0.5	1.9	0.13
11	11 58.8	15 20 44.68	−18 7 41.7	0.5	1.9	0.13	25	8 55.3	15 14 4.78	−17 42 52.3	0.5	1.9	0.13
12	11 54.7	15 20 34.46	18 7 3.9	0.5	1.9	0.13	26	8 51.2	15 13 58.54	17 42 29.1	0.5	1.9	0.13
13	11 50.6	15 20 24.24	18 6 26.0	0.5	1.9	0.13	27	8 47.2	15 13 52.47	17 42 6.6	0.5	1.9	0.13
14	11 46.5	15 20 14.02	18 5 48.2	0.5	1.9	0.13	28	8 43.2	15 13 46.57	17 41 44.8	0.5	1.9	0.13
15	11 42.4	15 20 3.81	18 5 10.3	0.5	1.9	0.13	29	8 39.1	15 13 40.83	17 41 23.7	0.5	1.9	0.13
16	11 38.3	15 19 53.63	−18 4 32.5	0.5	1.9	0.13	30	8 35.1	15 13 35.25	−17 41 3.2	0.5	1.9	0.13
17	11 34.2	15 19 43.47	18 3 54.7	0.5	1.9	0.13	July 1	8 31.1	15 13 29.85	17 40 43.4	0.5	1.9	0.13
18	11 30.1	15 19 33.33	18 3 17.0	0.5	1.9	0.13	2	8 27.1	15 13 24.63	17 40 24.3	0.5	1.9	0.13
19	11 26.0	15 19 23.22	18 2 39.4	0.5	1.9	0.13	3	8 23.1	15 13 19.59	17 40 5.8	0.5	1.9	0.13
20	11 21.9	15 19 13.15	18 2 2.0	0.5	1.9	0.13	4	8 19.0	15 13 14.72	17 39 48.1	0.5	1.9	0.13
21	11 17.8	15 19 3.11	−18 1 24.6	0.5	1.9	0.13	5	8 15.0	15 13 10.03	−17 39 31.0	0.5	1.8	0.13
22	11 13.7	15 18 53.12	18 0 47.4	0.5	1.9	0.13	6	8 11.0	15 13 5.53	17 39 14.7	0.5	1.8	0.13
23	11 9.6	15 18 43.17	18 0 10.3	0.5	1.9	0.13	7	8 7.0	15 13 1.21	17 38 59.1	0.5	1.8	0.13
24	11 5.6	15 18 33.26	17 59 33.5	0.5	1.9	0.13	8	8 3.0	15 12 57.07	17 38 44.2	0.5	1.8	0.13
25	11 1.5	15 18 23.41	17 58 56.8	0.5	1.9	0.13	9	7 59.0	15 12 53.13	17 38 30.1	0.5	1.8	0.13
26	10 57.4	15 18 13.61	−17 58 20.4	0.5	1.9	0.13	10	7 55.0	15 12 49.37	−17 38 16.8	0.5	1.8	0.13
27	10 53.3	15 18 3.87	17 57 44.1	0.5	1.9	0.13	11	7 51.1	15 12 45.80	17 38 4.2	0.5	1.8	0.13
28	10 49.2	15 17 54.21	17 57 8.1	0.5	1.9	0.13	12	7 47.1	15 12 42.42	17 37 52.4	0.5	1.8	0.13
29	10 45.1	15 17 44.61	17 56 32.3	0.5	1.9	0.13	13	7 43.1	15 12 39.24	17 37 41.3	0.5	1.8	0.13
30	10 41.0	15 17 35.07	17 55 56.7	0.5	1.9	0.13	14	7 39.1	15 12 36.27	17 37 31.0	0.5	1.8	0.13
31	10 36.9	15 17 25.62	−17 55 21.4	0.5	1.9	0.13	15	7 35.1	15 12 33.50	−17 37 21.5	0.5	1.8	0.13
June 1	10 32.8	15 17 16.25	17 54 46.4	0.5	1.9	0.13	16	7 31.2	15 12 30.92	17 37 12.8	0.5	1.8	0.13
2	10 28.7	15 17 6.97	17 54 11.7	0.5	1.9	0.13	17	7 27.2	15 12 28.54	17 37 4.8	0.5	1.8	0.13
3	10 24.6	15 16 57.76	17 53 37.3	0.5	1.9	0.13	18	7 23.2	15 12 26.36	17 36 57.6	0.5	1.8	0.13
4	10 20.6	15 16 48.65	17 53 3.2	0.5	1.9	0.13	19	7 19.2	15 12 24.38	17 36 51.2	0.5	1.8	0.13
5	10 16.5	15 16 39.64	−17 52 29.5	0.5	1.9	0.13	20	7 15.3	15 12 22.60	−17 36 45.7	0.5	1.8	0.13
6	10 12.4	15 16 30.73	17 51 56.2	0.5	1.9	0.13	21	7 11.3	15 12 21.02	17 36 40.9	0.5	1.8	0.13
7	10 8.3	15 16 21.92	17 51 23.3	0.5	1.9	0.13	22	7 7.4	15 12 19.64	17 36 36.9	0.5	1.8	0.13
8	10 4.2	15 16 13.21	17 50 50.8	0.5	1.9	0.13	23	7 3.4	15 12 18.47	17 36 33.7	0.5	1.8	0.13
9	10 0.2	15 16 4.61	17 50 18.7	0.5	1.9	0.13	24	6 59.5	15 12 17.51	17 36 31.4	0.5	1.8	0.13
10	9 56.1	15 15 56.12	−17 49 47.0	0.5	1.9	0.13	25	6 55.5	15 12 16.75	−17 36 29.9	0.5	1.8	0.13
11	9 52.0	15 15 47.75	17 49 15.7	0.5	1.9	0.13	26	6 51.6	15 12 16.20	17 36 29.2	0.5	1.8	0.13
12	9 48.0	15 15 39.51	17 48 44.9	0.5	1.9	0.13	27	6 47.6	15 12 15.86	17 36 29.3	0.5	1.8	0.13
13	9 43.9	15 15 31.39	17 48 14.6	0.5	1.9	0.13	28	6 43.7	15 12 15.72	17 36 30.2	0.5	1.8	0.13
14	9 39.8	15 15 23.40	17 47 44.8	0.5	1.9	0.13	29	6 39.8	15 12 15.78	17 36 31.9	0.5	1.8	0.13
15	9 35.8	15 15 15.54	−17 47 15.5	0.5	1.9	0.13	30	6 35.8	15 12 16.05	−17 36 34.5	0.5	1.8	0.13
16	9 31.7	15 15 7.82	−17 46 46.7	0.5	1.9	0.13	31	6 31.9	15 12 16.53	−17 36 37.9	0.5	1.8	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	10 18.7	4 59 54.86	+21 14 47.7	0.3	1.3	0.10	Feb. 15	7 14.7	4 56 42.66	+21 12 4.5	0.3	1.3	0.09
1	10 14.7	4 59 48.43	21 14 40.1	0.3	1.3	0.10	16	7 10.7	4 56 41.45	21 12 6.0	0.3	1.3	0.09
2	10 10.6	4 59 42.07	21 14 32.6	0.3	1.3	0.10	17	7 6.8	4 56 40.37	21 12 7.7	0.3	1.3	0.09
3	10 6.6	4 59 35.78	21 14 25.3	0.3	1.3	0.10	18	7 2.8	4 56 39.44	21 12 9.6	0.3	1.3	0.09
4	10 2.6	4 59 29.56	21 14 18.2	0.3	1.3	0.10	19	6 58.9	4 56 38.66	21 12 11.8	0.3	1.3	0.09
5	9 58.5	4 59 23.41	+21 14 11.2	0.3	1.3	0.10	20	6 54.9	4 56 38.02	+21 12 14.2	0.3	1.3	0.09
6	9 54.5	4 59 17.34	21 14 4.3	0.3	1.3	0.10	21	6 51.0	4 56 37.53	21 12 16.8	0.3	1.3	0.09
7	9 50.5	4 59 11.35	21 13 57.5	0.3	1.3	0.09	22	6 47.1	4 56 37.19	21 12 19.7	0.3	1.3	0.09
8	9 46.4	4 59 5.44	21 13 50.9	0.3	1.3	0.09	23	6 43.1	4 56 36.98	21 12 22.7	0.3	1.3	0.09
9	9 42.4	4 58 59.62	21 13 44.4	0.3	1.3	0.09	24	6 39.2	4 56 36.93	21 12 26.0	0.3	1.3	0.09
10	9 38.4	4 58 53.89	+21 13 38.2	0.3	1.3	0.09	25	6 35.2	4 56 37.03	+21 12 29.5	0.3	1.3	0.09
11	9 34.4	4 58 48.25	21 13 32.1	0.3	1.3	0.09	26	6 31.3	4 56 37.27	21 12 33.2	0.3	1.3	0.09
12	9 30.3	4 58 42.70	21 13 26.2	0.3	1.3	0.09	27	6 27.4	4 56 37.66	21 12 37.2	0.3	1.3	0.09
13	9 26.3	4 58 37.25	21 13 20.5	0.3	1.3	0.09	28	6 23.5	4 56 38.20	21 12 41.4	0.3	1.3	0.09
14	9 22.3	4 58 31.89	21 13 15.0	0.3	1.3	0.09	29	6 19.6	4 56 38.88	+21 12 45.9	0.3	1.3	0.09
15	9 18.3	4 58 26.63	+21 13 9.6	0.3	1.3	0.09	Sept. 1	18 29.3	5 17 45.99	+21 41 38.8	0.3	1.3	0.09
16	9 14.3	4 58 21.47	21 13 4.5	0.3	1.3	0.09	2	18 25.4	5 17 48.84	21 41 39.2	0.3	1.3	0.09
17	9 10.2	4 58 16.42	21 12 59.5	0.3	1.3	0.09	3	18 21.5	5 17 51.54	21 41 39.5	0.3	1.3	0.09
18	9 6.2	4 58 11.48	21 12 54.7	0.3	1.3	0.09	4	18 17.6	5 17 54.08	21 41 39.7	0.3	1.3	0.09
19	9 2.2	4 58 6.65	21 12 50.0	0.3	1.3	0.09	5	18 13.7	5 17 56.49	21 41 39.7	0.3	1.3	0.09
20	8 58.2	4 58 1.93	+21 12 45.6	0.3	1.3	0.09	6	18 9.8	5 17 58.75	+21 41 39.6	0.3	1.3	0.09
21	8 54.2	4 57 57.32	21 12 41.3	0.3	1.3	0.09	7	18 5.9	5 18 0.87	21 41 39.3	0.3	1.3	0.09
22	8 50.2	4 57 52.81	21 12 37.2	0.3	1.3	0.09	8	18 2.0	5 18 2.86	21 41 38.8	0.3	1.3	0.09
23	8 46.2	4 57 48.42	21 12 33.3	0.3	1.3	0.09	9	17 58.1	5 18 4.71	21 41 38.2	0.3	1.3	0.09
24	8 42.2	4 57 44.15	21 12 29.6	0.3	1.3	0.09	10	17 54.2	5 18 6.42	21 41 37.5	0.3	1.3	0.09
25	8 38.2	4 57 40.00	+21 12 26.2	0.3	1.3	0.09	11	17 50.3	5 18 7.97	+21 41 36.6	0.3	1.3	0.09
26	8 34.2	4 57 35.98	21 12 23.0	0.3	1.3	0.09	12	17 46.4	5 18 9.38	21 41 35.5	0.3	1.3	0.09
27	8 30.2	4 57 32.08	21 12 20.0	0.3	1.3	0.09	13	17 42.5	5 18 10.64	21 41 34.3	0.3	1.3	0.09
28	8 26.2	4 57 28.30	21 12 17.2	0.3	1.3	0.09	14	17 38.6	5 18 11.77	21 41 33.0	0.3	1.3	0.09
29	8 22.2	4 57 24.65	21 12 14.6	0.3	1.3	0.09	15	17 34.7	5 18 12.75	21 41 31.6	0.3	1.3	0.09
30	8 18.2	4 57 21.11	+21 12 12.2	0.3	1.3	0.09	16	17 30.8	5 18 13.60	+21 41 30.0	0.3	1.3	0.09
31	8 14.2	4 57 17.70	21 12 10.0	0.3	1.3	0.09	17	17 26.8	5 18 14.30	21 41 28.2	0.3	1.3	0.09
Feb. 1	8 10.2	4 57 14.42	21 12 8.1	0.3	1.3	0.09	18	17 22.9	5 18 14.87	21 41 26.2	0.3	1.3	0.09
2	8 6.3	4 57 11.27	21 12 6.4	0.3	1.3	0.09	19	17 19.0	5 18 15.29	21 41 24.1	0.3	1.3	0.09
3	8 2.3	4 57 8.26	21 12 4.9	0.3	1.3	0.09	20	17 15.1	5 18 15.57	21 41 22.0	0.3	1.3	0.09
4	7 58.3	4 57 5.38	+21 12 3.6	0.3	1.3	0.09	21	17 11.2	5 18 15.70	+21 41 19.7	0.3	1.3	0.09
5	7 54.3	4 57 2.64	21 12 2.5	0.3	1.3	0.09	22	17 7.2	5 18 15.68	21 41 17.2	0.3	1.3	0.09
6	7 50.3	4 57 0.02	21 12 1.6	0.3	1.3	0.09	23	17 3.3	5 18 15.52	21 41 14.6	0.3	1.3	0.09
7	7 46.4	4 56 57.53	21 12 1.0	0.3	1.3	0.09	24	16 59.3	5 18 15.22	21 41 11.8	0.3	1.3	0.09
8	7 42.4	4 56 55.17	21 12 0.7	0.3	1.3	0.09	25	16 55.4	5 18 14.77	21 41 8.9	0.3	1.3	0.09
9	7 38.4	4 56 52.96	+21 12 0.6	0.3	1.3	0.09	26	16 51.5	5 18 14.18	+21 41 5.9	0.3	1.3	0.09
10	7 34.5	4 56 50.89	21 12 0.7	0.3	1.3	0.09	27	16 47.5	5 18 13.45	21 41 2.7	0.3	1.3	0.09
11	7 30.5	4 56 48.96	21 12 1.0	0.3	1.3	0.09	28	16 43.6	5 18 12.57	21 40 59.4	0.3	1.3	0.09
12	7 26.6	4 56 47.18	21 12 1.5	0.3	1.3	0.09	29	16 39.6	5 18 11.56	21 40 55.9	0.3	1.3	0.09
13	7 22.6	4 56 45.53	21 12 2.3	0.3	1.3	0.09	30	16 35.7	5 18 10.41	21 40 52.4	0.3	1.3	0.09
14	7 18.6	4 56 44.03	+21 12 3.3	0.3	1.3	0.09	Oct. 1	16 31.7	5 18 9.11	+21 40 48.7	0.3	1.3	0.09
15	7 14.7	4 56 42.66	+21 12 4.5	0.3	1.3	0.09	2	16 27.8	5 18 7.68	+21 40 44.9	0.3	1.3	0.09

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Oct. 1	16 31.7	5 18 9.11	+21 40 48.7	0.3	1.3	0.09
2	16 27.8	5 18 7.68	21 40 44.9	0.3	1.3	0.09
3	16 23.8	5 18 6.11	21 40 41.0	0.3	1.3	0.09
4	16 19.9	5 18 4.41	21 40 37.0	0.3	1.3	0.09
5	16 15.9	5 18 2.55	21 40 32.8	0.3	1.3	0.09
6	16 11.9	5 18 0.55	+21 40 28.5	0.3	1.3	0.09
7	16 8.0	5 17 58.43	21 40 24.0	0.3	1.3	0.09
8	16 4.0	5 17 56.16	21 40 19.4	0.3	1.3	0.09
9	16 0.0	5 17 53.76	21 40 14.7	0.3	1.3	0.09
10	15 56.0	5 17 51.22	21 40 9.9	0.3	1.3	0.09
11	15 52.1	5 17 48.55	+21 40 5.0	0.3	1.3	0.09
12	15 48.1	5 17 45.75	21 39 59.9	0.3	1.3	0.09
13	15 44.1	5 17 42.80	21 39 54.8	0.3	1.3	0.09
14	15 40.1	5 17 39.74	21 39 49.5	0.3	1.3	0.09
15	15 36.1	5 17 36.56	21 39 44.1	0.3	1.3	0.09
16	15 32.1	5 17 33.24	+21 39 38.7	0.3	1.3	0.09
17	15 28.1	5 17 29.79	21 39 33.1	0.3	1.3	0.09
18	15 24.2	5 17 26.21	21 39 27.4	0.3	1.3	0.09
19	15 20.2	5 17 22.52	21 39 21.6	0.3	1.3	0.09
20	15 16.2	5 17 18.70	21 39 15.7	0.3	1.3	0.09
21	15 12.2	5 17 14.75	+21 39 9.6	0.3	1.3	0.09
22	15 8.2	5 17 10.69	21 39 3.5	0.3	1.3	0.09
23	15 4.2	5 17 6.51	21 38 57.4	0.3	1.3	0.09
24	15 0.2	5 17 2.22	21 38 51.1	0.3	1.3	0.09
25	14 56.2	5 16 57.81	21 38 44.7	0.3	1.3	0.09
26	14 52.2	5 16 53.29	+21 38 38.3	0.3	1.3	0.09
27	14 48.2	5 16 48.67	21 38 31.7	0.3	1.3	0.09
28	14 44.1	5 16 43.92	21 38 25.1	0.3	.3	0.09
29	14 40.1	5 16 39.05	21 38 18.3	0.3		0.09
30	14 36.1	5 16 34.08	21 38 11.5	0.3	.3	0.09
31	14 32.1	5 16 29.01	+21 38 4.6	0.3	3	0.09
Nov. 1	14 28.1	5 16 23.85	21 37 57.6	0.3	3	0.09
2	14 24.0	5 16 18.58	21 37 50.6	0.3	3	0.09
3	14 20.0	5 16 13.21	21 37 43.5	0.3	3	0.09
4	14 16.0	5 16 7.75	21 37 36.3	0.3	1.3	0.09
5	14 12.0	5 16 2.19	+21 37 29.1	0.3	1.3	0.09
6	14 8.0	5 15 56.53	21 37 21.7	0.3	1.3	0.09
7	14 3.9	5 15 50.77	21 37 14.3	0.3	1.3	0.10
8	13 59.9	5 15 44.93	21 37 6.9	0.3	1.3	0.10
9	13 55.9	5 15 39.02	21 36 59.4	0.3	1.3	0.10
10	13 51.9	5 15 33.02	+21 36 51.8	0.3	1.3	0.10
11	13 47.8	5 15 26.95	21 36 44.1	0.3	1.3	0.10
12	13 43.8	5 15 20.79	21 36 36.4	0.3	1.3	0.10
13	13 39.8	5 15 14.55	21 36 28.7	0.3	1.3	0.10
14	13 35.7	5 15 8.24	21 36 20.9	0.3	1.3	0.10
15	13 31.7	5 15 1.85	+21 36 13.1	0.3	1.3	0.10
16	13 27.6	5 14 55.40	+21 36 5.3	0.3	1.3	0.10
Nov. 16	13 27.6	5 14 55.40	+21 36 5.3	0.3	1.3	
17	13 23.6	5 14 48.89	21 35 57.4	0.3	1.3	
18	13 19.6	5 14 42.33	21 35 49.4	0.3	1.3	
19	13 15.5	5 14 35.70	21 35 41.4	0.3	1.3	
20	13 11.5	5 14 29.01	21 35 33.4	0.3	1.3	
21	13 7.4	5 14 22.26	+21 35 25.3	0.3	1.3	
22	13 3.4	5 14 15.44	21 35 17.2	0.3	1.3	
23	12 59.3	5 14 8.59	21 35 9.1	0.3	1.3	
24	12 55.3	5 14 1.69	21 35 1.0	0.3	1.3	
25	12 51.2	5 13 54.75	21 34 52.9	0.3	1.3	
26	12 47.2	5 13 47.77	+21 34 44.9	0.3	1.3	
27	12 43.1	5 13 40.75	21 34 36.9	0.3	1.3	
28	12 39.1	5 13 33.69	21 34 28.8	0.3	1.3	
29	12 35.0	5 13 26.60	21 34 20.6	0.3	1.3	
30	12 31.0	5 13 19.46	21 34 12.4	0.3	1.3	
Dec. 1	12 26.9	5 13 12.29	+21 34 4.2	0.3	1.3	
2	12 22.9	5 13 5.11	21 33 56.1	0.3	1.3	
3	12 18.8	5 12 57.92	21 33 48.0	0.3	1.3	
4	12 14.8	5 12 50.70	21 33 39.9	0.3	1.3	
5	12 10.7	5 12 43.47	21 33 31.9	0.3	1.3	
6	12 6.7	5 12 36.22	+21 33 23.8	0.3	1.3	
7	12 2.6	5 12 28.96	21 33 15.7	0.3	1.3	
8	11 58.6	5 12 21.68	21 33 7.7	0.3	1.3	
9	11 54.5	5 12 14.41	21 32 59.7	0.3	1.3	
10	11 50.5	5 12 7.14	21 32 51.7	0.3	1.3	
11	11 46.4	5 11 59.88	+21 32 43.8	0.3	1.3	
12	11 42.4	5 11 52.62	21 32 36.0	0.3	1.3	
13	11 38.3	5 11 45.36	21 32 28.2	0.3	1.3	
14	11 34.3	5 11 38.12	21 32 20.4	0.3	1.3	
15	11 30.2	5 11 30.89	21 32 12.7	0.3	1.3	
16	11 26.2	5 11 23.67	+21 32 5.0	0.3	1.3	
17	11 22.1	5 11 16.48	21 31 57.4	0.3	1.3	
18	11 18.1	5 11 9.32	21 31 49.9	0.3	1.3	
19	11 14.0	5 11 2.18	21 31 42.4	0.3	1.3	
20	11 9.9	5 10 55.07	21 31 35.0	0.3	1.3	
21	11 5.9	5 10 47.99	+21 31 27.7	0.3	1.3	
22	11 1.8	5 10 40.93	21 31 20.5	0.3	1.3	
23	10 57.8	5 10 33.91	21 31 13.3	0.3	1.3	
24	10 53.8	5 10 26.92	21 31 6.2	0.3	1.3	
25	10 49.7	5 10 19.99	21 30 59.1	0.3	1.3	
26	10 45.7	5 10 13.11	+21 30 52.2	0.3	1.3	
27	10 41.6	5 10 6.28	21 30 45.4	0.3	1.3	
28	10 37.6	5 9 59.50	21 30 38.6	0.3	1.3	
29	10 33.5	5 9 52.78	21 30 31.9	0.3	1.3	
30	10 29.5	5 9 46.10	21 30 25.3	0.3	1.3	
31	10 25.5	5 9 39.47	+21 30 18.8	0.3	1.3	
32	10 21.4	5 9 32.90	+21 30 12.5	0.3	1.3	

PART III

PHENOMENA

ECLIPSES IN 1896.

IN the year 1896 there will be four eclipses, two of the sun and two of the moon.

I.—*An Annular Eclipse of the Sun*, 1896, February 13, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, February 13ᵈ 3ʰ 32ᵐ 25ˢ.9

Sun and moon's R. A.	21ʰ 47ᵐ 8ˢ.01	Hourly motions	9ˢ.79 and 113ˢ.38
Sun's declination	13° 22′ 12″.3 S.	Hourly motion	0′ 50″.5 N.
Moon's declination	14 17 33.2 S.	Hourly motion	12 35.0 N.
Sun's equa. hor. parallax	8.9	Sun's true semidiameter	16 11.7
Moon's equa. hor. parallax	54 29.3	Moon's true semidiameter	14 50.1

CIRCUMSTANCES OF THE ECLIPSE.

		d	h	m	Longitude from Greenwich.	Latitude.
Eclipse begins	February	13	1	53.9	137° 45′.9 W.	58° 32′.5 S.
Central eclipse begins		13	3	38.8	117 0.7 E.	76 21.0 S.
Central eclipse ends		13	5	8.5	28 24.5 E.	41 4.5 S.
Eclipse ends		13	6	53.2	7 10.8 W.	10 32.9 S.

II.—*A Partial Eclipse of the Moon*, 1896, February 28, invisible at Washington, but visible generally in Europe, Asia, and Africa.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☍ in right ascension, February 28ᵈ 8ʰ 15ᵐ 40ˢ.4

Sun's right ascension	22ʰ 45ᵐ 20ˢ.08	Hourly motion	9ˢ.38
Moon's right ascension	10 45 20.08	Hourly motion	136.15
Sun's declination	7° 54′ 21″.3 S.	Hourly motion	0′ 56″.7 N.
Moon's declination	7 16 18.4 N.	Hourly motion	17 30.7 S.
Sun's equa. hor. parallax	8.9	Sun's true semidiameter	16 8.5
Moon's equa. hor. parallax	61 15.5	Moon's true semidiameter	16 40.7

TIMES OF THE PHASES.

		d	h	m	
Moon enters penumbra	February	28	5	14.4	Greenwich Mean Time.
Moon enters shadow		28	6	16.3	
Middle of the eclipse		28	7	45.8	
Moon leaves shadow		28	9	15.1	
Moon leaves penumbra		28	10	16.7	

CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from north point.	The moon being in the zenith in longitude from Greenwich	and in latitude.
First	85° to E.	88° 3′ E.	7° 51′ N.
Last	30 to W.	44 56 E.	6 59 N.

Magnitude of the eclipse = 0.871, (moon's diameter = 1.0).

III.—*A Total Eclipse of the Sun*, 1896, August 8, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, August 8ᵈ 16ʰ 37ᵐ 19ˢ.7

Sun and moon's R. A.	9ʰ 17ᵐ 57ˢ.53	Hourly motions	9ˢ.50 and 137ˢ.95
Sun's declination	15° 44′ 23″.4 N.	Hourly motion	0′ 43″.6 S.
Moon's declination	16 29 18.9 N.	Hourly motion	13 56.0 S.
Sun's equa. hor. parallax	8.7	Sun's true semidiameter	15 48.0
Moon's equa. hor. parallax	59 28.0	Moon's true semidiameter	16 11.4

CIRCUMSTANCES OF THE ECLIPSE.

		d h m	Longitude from Greenwich.	Latitude.
			° ′	° ′
Eclipse begins	August	8 14 43.3	32 22.3 E.	47 46.8 N.
Central eclipse begins		8 15 53.2	0 20.5 W.	62 51.5 N.
Central eclipse at noon		8 16 37.3	111 59.1 E.	65 17.9 N.
Central eclipse ends		8 18 25.3	179 5.9 W.	20 8.5 N.
Eclipse ends		8 19 34.9	158 34.5 E.	3 29.2 N.

IV.—*A Partial Eclipse of the Moon*, 1896, August 22, visible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☍ in right ascension, August 22ᵈ 19ʰ 32ᵐ 3ˢ.4

Sun's right ascension	10ʰ 10ᵐ 44ˢ.30	Hourly motion	9ˢ.20
Moon's right ascension	22 10 44.30	Hourly motion	112.81
Sun's declination	11° 15′ 37″.3 N.	Hourly motion	0′ 51″.2 S.
Moon's declination	10 38 44.8 S.	Hourly motion	13 29.8 N.
Sun's equa. hor. parallax	8.7	Sun's true semidiameter	15 49.6
Moon's equa. hor. parallax	55 4.2	Moon's true semidiameter	14 59.6

TIMES OF THE PHASES.

		d h m	
Moon enters penumbra	August	22 16 6.7	Greenwich Mean Time.
Moon enters shadow		22 17 24.5	
Middle of the eclipse		22 18 57.5	
Moon leaves shadow		22 20 30.4	
Moon leaves penumbra		22 21 47.9	

CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from north point.	The moon being in the zenith in longitude from Greenwich	and in latitude.
	°	° ′	° ′
First	101 to E.	81 26 W.	11 7 S.
Last	153 to W.	126 35 W.	10 26 S.

Magnitude of the eclipse = 0.735 (moon's diameter = 1.0).

The regions within which the eclipses of the sun are visible, are laid down on the ccompanying charts, from which, by means of the dotted lines, may also be found the Greenwich times of beginning and ending for any place within fifteen or twenty minutes.

BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE OF THE SUN, 1896, FEBRUARY 13.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow On Fundamental Plane.	
	x	*y*	Log sin *d*	Log cos *d*	*μ*	*l*	*l′*
h m					° ′		
1 50	−0.78773	−1.38730	−9.36473	+9.98803	23 53.4	+0.57086	+0.024
2 0	−0.71082	−1.35133	−9.36465	+9.98803	26 23.4	+0.57088	+0.024
10	0.63391	1.31535	9.36458	9.98804	28 53.5	0.57090	0.024
20	0.55700	1.27937	9.36451	9.98804	31 23.5	0.57092	0.024
30	0.48009	1.24338	9.36444	9.98804	33 53.5	0.57093	0.024
40	0.40318	1.20739	9.36436	9.98805	36 23.5	0.57095	0.024
50	0.32628	1.17139	9.36429	9.98805	38 53.5	0.57097	0.024
3 0	−0.24938	−1.13538	−9.36422	+9.98806	41 23.5	+0.57098	+0.024
10	0.17249	1.09937	9.36415	9.98806	43 53.5	0.57100	0.024
20	0.09560	1.06335	9.36407	9.98806	46 23.6	0.57101	0.024
30	−0.01871	1.02732	9.36400	9.98807	48 53.6	0.57103	0.025
40	+0.05818	0.99128	9.36393	9.98807	51 23.6	0.57104	0.025
50	0.13506	0.95523	9.36386	9.98807	53 53.6	0.57105	0.025
4 0	+0.21194	−0.91917	−9.36378	+9.98808	56 23.6	+0.57106	+0.0250
10	0.28882	0.88311	9.36371	9.98808	58 53.6	0.57107	0.0250
20	0.36570	0.84705	9.36364	9.98808	61 23.6	0.57108	0.0250
30	0.44258	0.81098	9.36357	9.98809	63 53.7	0.57109	0.0250
40	0.51946	0.77491	9.36349	9.98809	66 23.7	0.57110	0.0250
50	0.59633	0.73883	9.36342	9.98810	68 53.7	0.57111	0.0250
5 0	+0.67320	−0.70275	−9.36335	+9.98810	71 23.7	+0.57112	+0.0250
10	0.75006	0.66666	9.36328	9.98810	73 53.7	0.57113	0.0251
20	0.82692	0.63057	9.36321	9.98811	76 23.7	0.57114	0.0251
30	0.90377	0.59447	9.36313	9.98811	78 53.7	0.57115	0.0251
40	0.98062	0.55836	9.36306	9.98812	81 23.8	0.57115	0.0251
50	1.05747	0.52225	9.36299	9.98812	83 53.8	0.57116	0.0251
6 0	+1.13431	−0.48613	−9.36292	+9.98813	86 23.8	+0.57116	+0.0251
10	1.21115	0.45001	9.36285	9.98813	88 53.8	0.57116	0.0251
20	1.28798	0.41389	9.36277	9.98813	91 23.8	0.57117	0.0251
30	1.36481	0.37776	9.36270	9.98814	93 53.8	0.57117	0.0251
40	1.44163	0.34163	9.36263	9.98814	96 23.8	0.57117	0.0251
50	1.51845	0.30548	9.36256	9.98815	98 53.9	0.57118	0.0251
7 0	+1.59527	−0.26933	−9.36249	+9.98815	101 23.9	+0.57118	+0.0251

Greenwich Mean Time.	Log Δ *x* for 1 Minute.	Log Δ *y* for 1 Minute.	Log Δ *μ* for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
h m					
1 0	+ 7.8861	+ 7.5555	+1.1761	+7.67540	+7.6732
2 0	7.8860	7.5560	1.1761	7.67540	7.6732
3 0	7.8859	7.5565	1.1761	7.67539	7.6732
4 0	7.8858	7.5569	1.1761	7.67539	7.6732
5 0	7.8857	7.5573	1.1761	7.67539	7.6732
6 0	7.8856	7.5577	1.1761	7.67538	7.673
7 0	+ 7.8854	+ 7.5581	+1.1761	+7.67538	+7.673

Note.—Geographical positions, centre line, &c., are not given for this eclipse.

BESSELIAN ELEMENTS OF THE TOTAL ECLIPSE OF THE SUN, 1896, AUGUST 8.

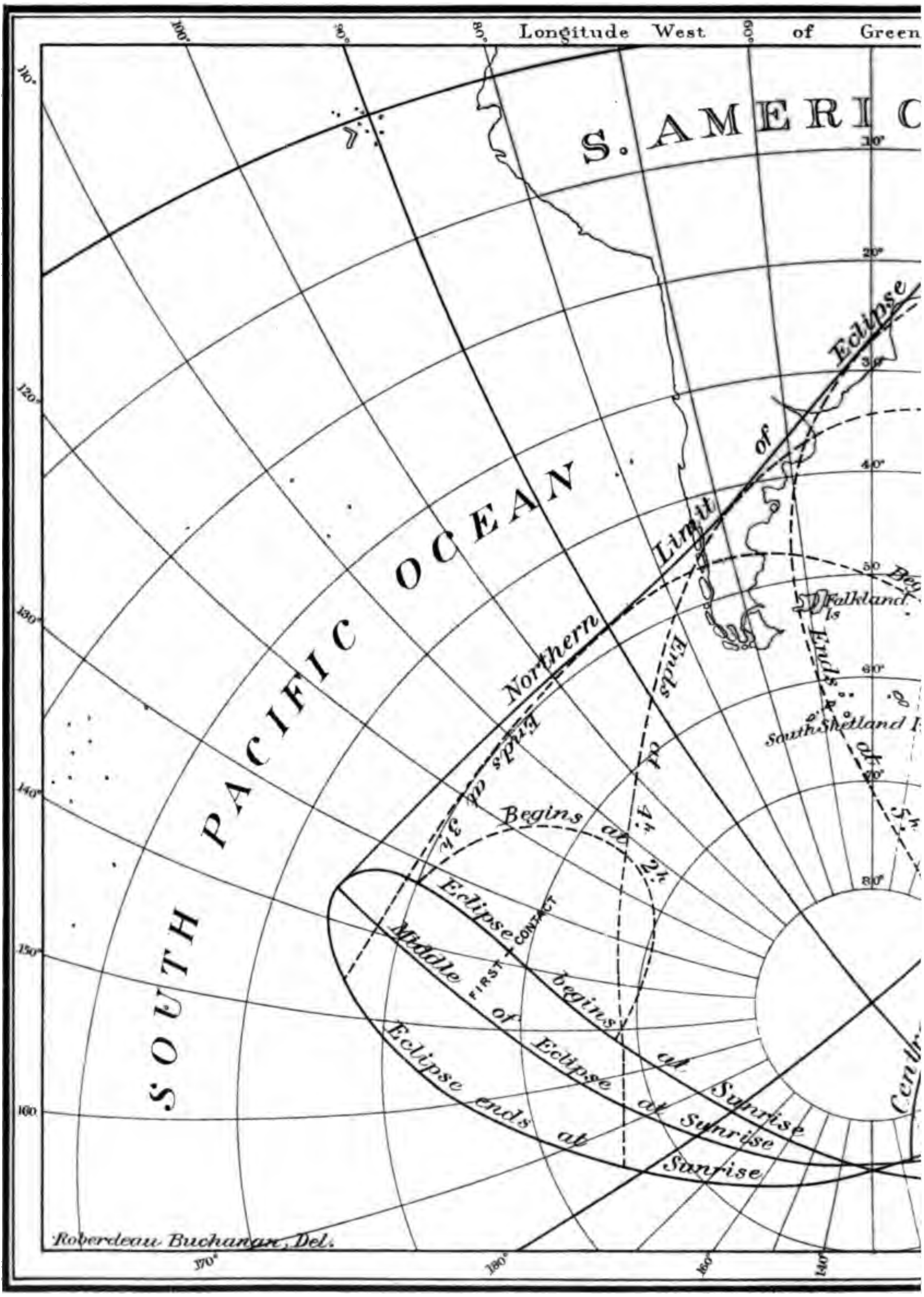
Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow On Fundamental Plane.	
	x	*y*	Log sin *d*	Log cos *d*	*μ*	*l*	*l′*
h m					° ′		
14 40	−1.01510	+1.19269	+9·43396	+9·98335	218 40.7	+0.53912	−0.00675
50	0.92858	1.15563	9·43390	9·98336	221 10.7	0.53912	0.00676
15 0	−0.84206	+1.11857	+9·43385	+9·98336	223 40.8	+0.53911	−0.00677
10	0.75554	1.08149	9·43380	9·98336	226 10.8	0.53910	0.00678
20	0.66902	1.04440	9·43375	9·98337	228 40.8	0.53909	0.00679
30	0.58249	1.00730	9·43370	9·98337	231 10.9	0.53908	0.00680
40	0.49597	0.97020	9·43365	9·98338	233 40.9	0.53907	0.00681
50	0.40945	0.93309	9·43359	9·98338	236 10.9	0.53906	0.00682
16 0	−0.32293	+0.89597	+9·43354	+9·98339	238 40.9	+0.53905	−0.00683
10	0.23641	0.85884	9·43349	9·98339	241 11.0	0.53904	0.00684
20	0.14989	0.82171	9·43344	9·98340	243 41.0	0.53902	0.00685
30	−0.06338	0.78457	9·43339	9·98340	246 11.0	0.53901	0.00687
40	+0.02313	0.74742	9·43334	9·98341	248 41.0	0.53899	0.00688
50	0.10964	0.71026	9·43329	9·98341	251 11.1	0.53898	0.00689
17 0	+0.19615	+0.67309	+9·43324	+9·98342	253 41.1	+0.53896	−0.00691
10	0.28266	0.63592	9·43318	9·98342	256 11.1	0.53895	0.00692
20	0.36917	0.59874	9·43313	9·98342	258 41.2	0.53893	0.00694
30	0.45568	0.56155	9·43308	9·98343	261 11.2	0.53891	0.00696
40	0.54218	0.52435	9·43303	9·98343	263 41.2	0.53889	0.00698
50	0.62868	0.48714	9·43298	9·98344	266 11.2	0.53887	0.00700
18 0	+0.71518	+0.44993	+9·43293	+9·98344	268 41.3	+0.53885	−0.00702
10	0.80168	0.41271	9·43287	9·98344	271 11.3	0.53883	0.00705
20	0.88817	0.37549	9·43282	9·98345	273 41.3	0.53881	0.00707
30	0.97466	0.33826	9·43277	9·98345	276 11.4	0.53879	0.00709
40	1.06115	0.30102	9·43272	9·98345	278 41.4	0.53877	0.00712
50	1.14763	0.26377	9·43267	9·98346	281 11.4	0.53875	0.00713
19 0	+1.23411	+0.22652	+9·43261	+9·98346	283 41.4	+0.53872	−0.00715
10	1.32058	0.18926	9·43256	9·98346	286 11.5	0.53870	0.00718
20	1.40705	0.15199	9·43251	9·98347	288 41.5	0.53867	0.00720
30	1.49351	0.11472	9·43246	9·98347	291 11.5	0.53865	0.00723
40	+1.57997	+0.07744	+9·43240	+9·98347	293 41.5	+0.53862	−0.00725

Greenwich Mean Time.	Log Δ *x* for 1 Minute.	Log Δ *y* for 1 Minute.	Log Δ *μ* for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
h m					
14 0	+ 7·9371	− 7·5683	+ 1.1762	+ 7.66406	+ 7.66190
15 0	7·9371	7·5691	1.1762	7.66407	7.66190
16 0	7·9371	7·5697	1.1762	7.66407	7.66190
17 0	7·9371	7·5702	1.1762	7.66407	7.66190
18 0	7·9370	7·5707	1.1762	7.66408	7.66191
19 0	7·9369	7·5712	1.1762	7.66408	7.66191
20 0	+ 7·9367	− 7·5717	+ 1.1762	+ 7.66408	+ 7.66191

PATH OF THE SHADOW DURING THE TOTAL ECLIPSE OF THE SUN, 1896, AUGUST 8.

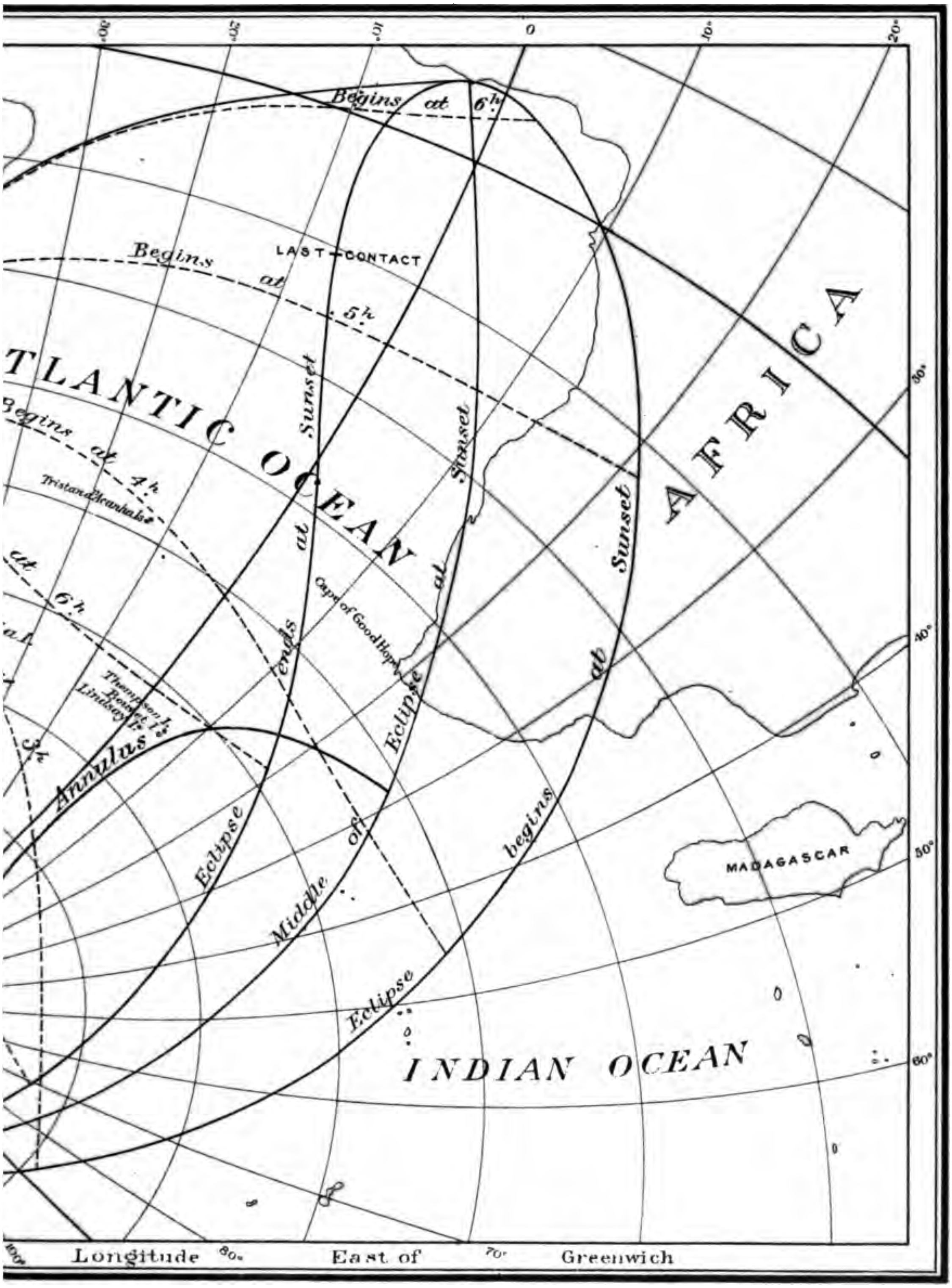
Greenwich Mean Time.	Northern Limit of Shadow Path.		Central Line.		Southern Limit of Shadow Path.		Duration of Totality on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
	° ′	° ′	° ′	° ′	° ′	° ′	m s
Limits.	+63 10.6	0 57.4 W.	+62 51.5	0 20.5 W.	+62 18.2	0 49.2 E.	
$15^h 55^m$	67 20.0	12 0.9 E.	67 46.1	17 23.6 E.	68 12.2	22 46.3	1 34.7
16 0	+71 24.3	34 53.6	+71 3.8	38 31.8	+70 43.3	42 10.0	1 47.9
5	72 43.4	52 16.0	72 6.2	54 55.9	71 29.0	57 35.8	1 57.7
10	72 51.5	66 59.0	72 5.8	68 45.2	71 20.1	70 31.4	2 5.5
15	72 16.7	79 18.5	71 27.1	80 18.6	70 37.5	81 18.7	2 12.2
20	71 15.0	89 27.1	70 24.4	89 51.1	69 33.8	90 15.1	2 17.9
25	69 56.0	97 44.6	69 5.8	97 43.6	68 15.6	97 42.6	2 22.7
30	+68 26.2	104 34.3	+67 37.6	104 15.5	+66 49.0	103 56.7	2 26.9
35	66 50.4	110 18.1	66 3.6	109 45.1	65 16.8	109 12.1	2 30.6
40	65 9.6	115 5.9	64 24.9	114 22.7	63 40.2	113 39.8	2 33.9
45	63 26.7	119 13.1	62 44.1	118 23.3	62 1.5	117 33.5	2 36.5
50	61 41.9	122 45.7	61 1.4	121 51.8	60 20.9	120 57.9	2 38.5
55	59 56.4	125 54.1	59 17.9	124 57.2	58 39.4	124 0.3	2 40.0
17 0	+58 10.2	128 41.6	+57 33.6	127 42.7	+56 57.0	126 43.8	2 41.1
5	56 23.5	131 13.8	55 48.8	130 13.5	55 14.1	129 13.2	2 41.7
10	54 36.4	133 33.1	54 3.5	132 31.9	53 30.6	131 30.7	2 41.8
15	52 48.9	135 43.3	52 17.7	134 41.5	51 46.5	133 39.7	2 41.4
20	51 0.8	137 46.0	50 31.3	136 43.8	50 1.8	135 41.6	2 40.6
25	49 12.1	139 43.4	48 44.2	138 40.9	48 16.3	137 38.4	2 39.3
30	+47 22.5	141 37.4	+46 56.1	140 34.7	+46 29.7	139 32.0	2 37.6
35	45 31.9	143 30.5	45 7.1	142 27.5	44 42.3	141 24.5	2 35.4
40	43 39.9	145 24.1	43 16.6	144 20.8	42 53.3	143 17.5	2 32.7
45	41 46.0	147 19.8	41 24.3	146 16.1	41 2.6	145 12.4	2 29.5
50	39 49.6	149 19.6	39 29.5	148 15.5	39 9.4	147 11.4	2 25.8
55	37 49.9	151 27.7	37 31.5	150 22.4	37 13.1	149 17.1	2 21.6
18 0	+35 46.2	153 46.2	+35 29.7	152 39.1	+35 13.2	151 32.0	2 16.7
5	33 36.8	156 21.3	33 22.5	155 11.8	33 8.2	154 2.3	2 11.0
10	31 18.9	159 22.0	31 7.3	158 8.4	30 55.7	156 54.8	2 4.5
15	28 47.0	163 6.9	28 39.4	161 46.0	28 31.8	160 25.1	1 56.9
20	25 48.4	168 19.3 E.	25 47.7	166 40.7	25 47.0	165 2.1	1 46.5
25			21 18.3	177 10.5 E.	22 22.3	171 59.8 E.	1 28.1
Limits.	+20 40.0	178 44.8 W.	+20 8.5	179 5.9 W.	+19 34.6	179 29.3 W.	

ANNULAR ECLIPS



Note. *The hours of beginni*

EBRUARY 13TH 1896.



ling are expressed in Greenwich Mean Time.

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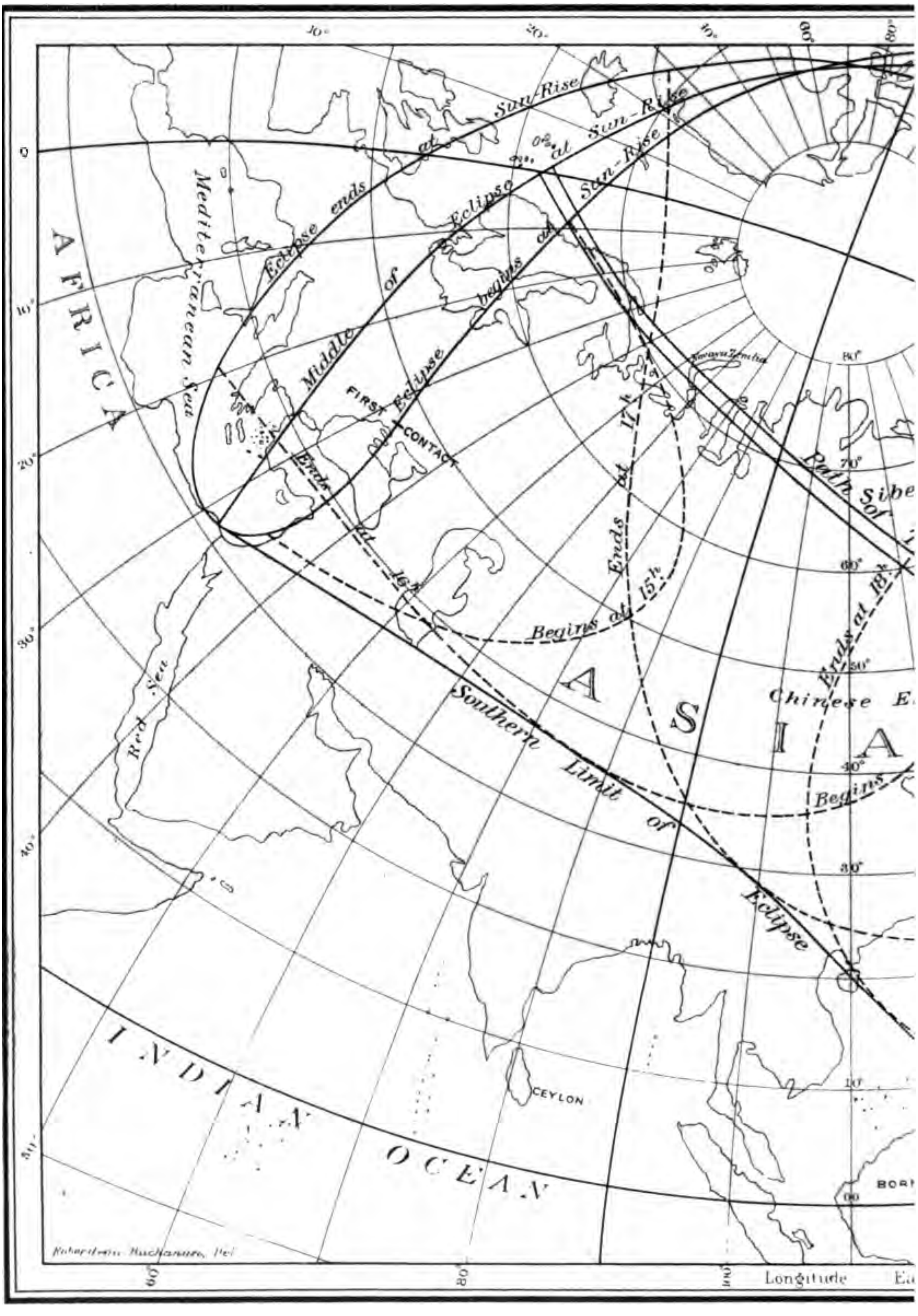
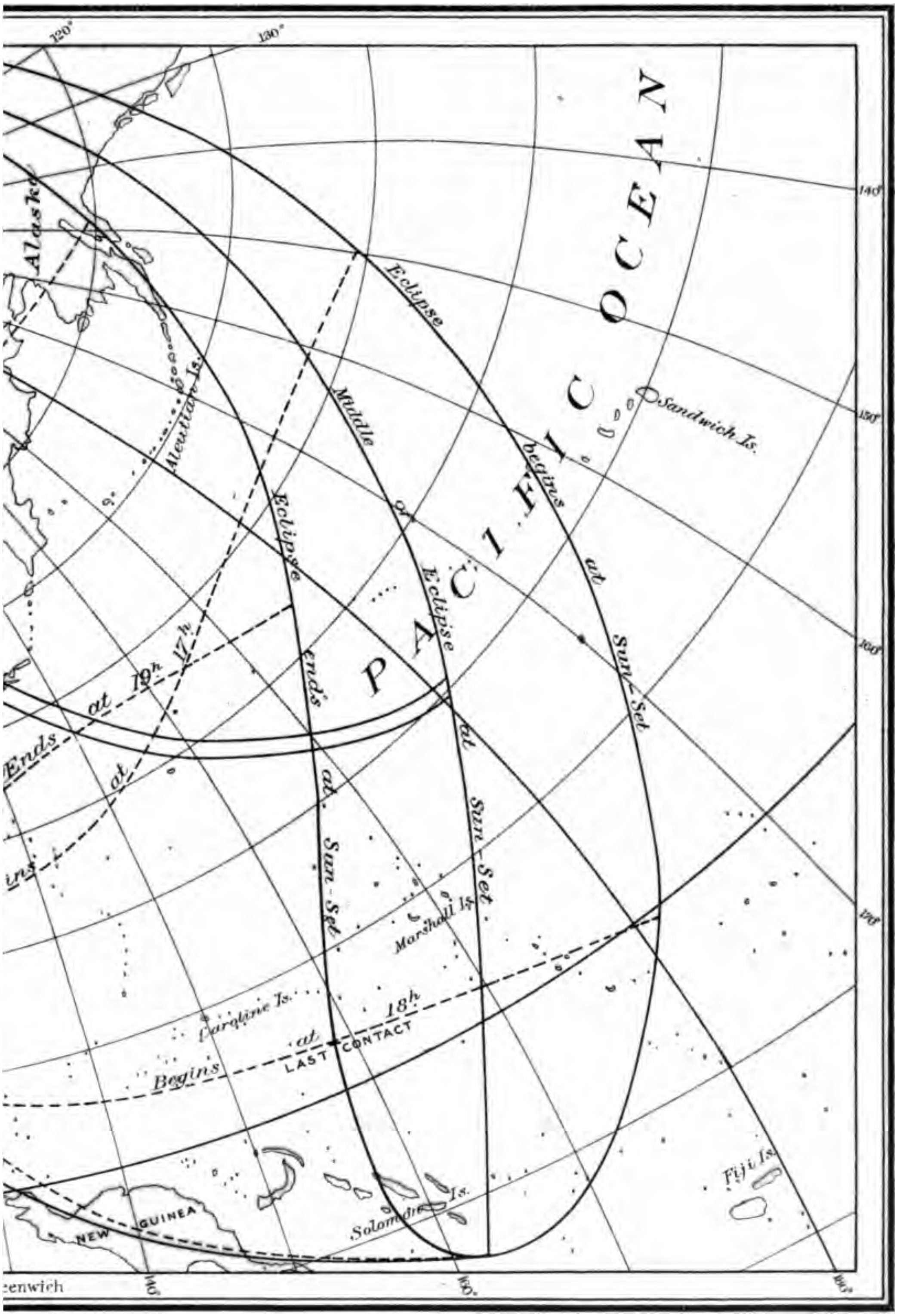
TOTAL ECLIPS



Note. *The hours of beginning a*

GUST 8TH 1896.



l in Greenwich Mean Time.

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WASHINGTON MEAN TIME.

PHASES OF THE MOON.

New Moon.				First Quarter.				Full Moon.				Last Quarter.			
	d	h	m		d	h	m		d	h	m		d	h	m
												January	6	22	16.7
January	14	5	11.2	January	22	9	34.1	January	29	15	47.1	February	5	7	29.8
February	12	23	4.4	February	21	4	6.4	February	28	2	43.1	March	5	18	20.7
March	13	17	39.7	March	21	18	48.5	March	28	12	13.3	April	4	7	15.9
April	12	11	14.6	April	20	5	38.5	April	26	20	39.0	May	3	22	17.0
May	12	2	38.4	May	19	13	12.8	May	26	4	48.3	June	2	14	54.0
June	10	15	34.6	June	17	18	32.4	June	24	13	46.7	July	2	8	15.0
July	10	2	26.8	July	16	22	56.1	July	24	0	36.9	August	1	1	26.1
August	8	11	53.6	August	15	3	54.3	August	22	13	56.2	August	30	17	47.0
September	6	20	35.1	September	13	11	1.3	September	21	5	41.1	September	29	8	50.2
October	6	5	10.0	October	12	21	39.2	October	20	23	9.2	October	28	22	12.4
November	4	14	18.8	November	11	12	32.4	November	19	17	16.7	November	27	9	35.5
December	4	0	42.8	December	11	7	21.1	December	19	10	57.1	December	26	19	0.4

PERIGEE, APOGEE, AND GREATEST LIBRATION.

Perigee.			Apogee.			Greatest Libration.									
	d	h		d	h		d	h	m			d	h	m	
January	3	11.0	January	19	11.3	January	11	11	0	E.	January	25	14	49	W.
January	31	8.8	February	16	2.9	February	7	2	50	E.	February	22	20	50	W.
February	28	18.3	March	14	8.3	March	5	24	11	E.	March	22	3	28	W.
March	28	6.3	April	10	10.6	April	3	6	14	E.	April	19	4	20	W.
April	25	16.1	May	7	22.6	May	1	12	23	E.	May	16	12	12	W.
May	23	18.2	June	4	15.5	May	29	13	46	E.	June	11	20	4	W.
June	19	22.2	July	2	10.1	June	26	5	0	E.	July	8	15	55	W.
July	15	0.9	July	30	4.7	July	23	2	32	E.	August	5	6	7	W.
August	11	1.3	August	26	21.4	August	18	9	38	E.	September	2	6	44	W.
September	8	2.8	September	23	9.7	September	14	15	22	E.	September	30	12	27	W.
October	6	12.0	October	20	12.9	October	12	15	22	E.	October	28	18	17	W.
November	3	23.7	November	16	16.4	November	9	21	30	E.	November	25	15	43	W.
December	2	9.3	December	14	6.9	December	8	3	23	E.	December	22	8	26	W.
December	30	7.3													

FORMULÆ FOR THE LIBRATION OF THE MOON.

Put I, the inclination of the moon's equator to the ecliptic (=1 28′.8),

Ω, the mean longitude of the moon's ascending node, (see page 278), or the mean longitude of the descending node of the moon's equator.

C, the angle at the centre of the moon's disk made by a lunar meridian with the circle of declination, counted from north to east on the apparent disk,

$\lambda, \beta, \alpha', \delta'$ the apparent longitude, latitude, right ascension, and declination of the moon, corrected for parallax,

λ', the selenocentric longitude of the earth, counted on the moon's equator from its descending node, Ω,

$i, \Delta, \Omega', \text{☾}$, the quantities defined on page 276, where their values for the year are given.

The moon's libration in longitude and latitude may then be found, for any time, by means of the following formulæ, in connection with the tables given on pages 276 and 277:—

$$\left.\begin{aligned} \Delta\lambda &= -\,0'.57 \sin 2\,(\Omega - \lambda) \\ a &= \sin I \cos(\Omega - \lambda) \\ \tan B &= \tan I \sin(\Omega - \lambda) \\ \lambda' &= \lambda + \Delta\lambda + a\,b \end{aligned}\right\} \quad \textit{See table, page 277.}$$

$$\text{The libration in latitude} = b = B - \beta$$

$$\text{The libration in longitude} = l = \lambda' - \text{☾}$$

$$\sin C = \sin i \, \frac{\cos(\lambda' + \Delta - \Omega)}{\cos \delta'} = -\sin i \, \frac{\cos(\alpha' - \Omega')}{\cos b}$$

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
κ Geminorum	3.7	+2.09	+2.2	+24 38.8	**1** 0 1.9	+11 7.1	+0.4119	0.5856	−0.1381	+70	− 5
μ^1 Cancri	6.3	2.03	1.1	22 55.9	8 42.6	− 4 32.7	+0.8455	0.5805	0.1616	+90	+16
B. A. C. 2703	7.5	2.03	+1.1	22 45.4	8 49.5	− 4 26.1	+1.0030	0.5805	0.1620	+90	+26
η Cancri	5.4	1.96	−0.3	20 47.7	19 24.1	+ 5 44.0	+1.1260	0.5737	0.1881	+90	+32
38 Cancri	7.0	1.92	0.6	20 8.7	22 16.6	+ 8 30.0	+1.2280	0.5722	0.1945	+90	+41
39 Cancri	7.0	+1.92	−0.7	+20 22.5	22 26.1	+ 8 39.1	+0.9670	0.5716	−0.1949	+90	+20
40 Cancri	7.3	1.92	0.7	20 20.3	22 28.3	+ 8 41.2	+0.9970	0.5716	0.1951	+90	+22
B. A. C. 2919	7.3	1.92	0.7	20 2.2	22 32.9	+ 8 45.6	+1.2890	0.5715	0.1952	+90	+48
e Cancri	7.1	1.92	0.7	20 5.3	22 41.6	+ 8 53.9	+1.2050	0.5715	0.1955	+90	+38
B. A. C. 2931	7.5	1.92	0.8	20 14.7	23 8.9	+ 9 20.2	+0.9583	0.5715	0.1965	+90	+19
γ Cancri	4.9	+1.94	−1.1	+21 50.5	23 43.6	+ 9 53.6	−0.7635	0.5709	−0.1978	+ 1	−65
78 Cancri	7.8	1.82	1.9	17 53.4	**2** 10 32.1	− 3 42.0	+0.9499	0.5632	0.2202	+90	+16
80 Cancri	6.8	1.82	2.2	18 28.2	11 45.7	− 2 31.1	+0.0972	0.5626	0.2224	+49	−30
83 Cancri	5.7	1.79	2.5	18 8.8	14 45.9	+ 0 22.5	−0.2563	0.5607	0.2279	+31	−49
8 Leonis	5.7	1.70	3.4	16 54.1	22 34.0	+ 7 53.8	−0.8335	0.5549	0.2408	− 1	−73
11 Leonis	6.8	+1.67	−3.0	+14 48.9	23 1.5	+ 8 20.3	+1.1520	0.5549	−0.2415	+90	+27
ψ Leonis	6.0	1.65	3.2	14 29.7	**3** 1 31.0	+10 44.4	+0.8650	0.5527	0.2453	+90	+ 7
23 Leonis	6.3	1.61	3.4	13 33.0	4 44.4	−10 8.9	+1.0160	0.5509	0.2498	+90	+16
ν Leonis	5.3	1.56	3.6	12 56.3	7 56.0	− 7 4.0	+0.8249	0.5493	0.2540	+90	+ 4
α Leonis	1.3	1.54	4.0	12 28.5	12 29.2	− 2 40.2	+0.1219	0.5463	0.2595	+51	−34
44 Leonis	6.0	+1.43	−4.1	+ 9 18.7	20 8.5	+ 4 43.3	+1.2800	0.5420	−0.2674	+90	+34
45 Leonis	6.0	1.43	4.5	10 17.4	21 13.6	+ 5 46.2	+0.0067	0.5416	0.2684	+44	−41
ρ Leonis	4.0	1.40	4.6	9 47.9	23 35.7	+ 8 3.6	−0.1807	0.5398	0.2705	+35	−51
49 Leonis	6.0	1.39	4.5	9 11.2	**4** 0 37.5	+ 9 3.3	+0.1974	0.5394	0.2713	+55	−32
37 Sextantis	6.3	1.33	4.4	6 55.2	5 44.6	− 9 59.9	+1.0750	0.5369	0.2751	+90	+16
38 Sextantis	7.8	+1.32	−4.4	+ 6 53.6	6 18.7	− 9 26.9	+0.9443	0.5369	−0.2754	+90	+ 7
56 Leonis	6.6	1.27	4.8	6 44.3	10 21.8	− 5 31.8	−0.0184	0.5355	0.2777	+43	−44
c Leonis	5.3	1.25	5.0	6 39.5	12 34.3	− 3 23.7	−0.5530	0.5342	0.2790	+16	−76
79 Leonis	6.0	1.11	4.6	1 58.6	23 23.7	+ 7 14.2	+1.0670	0.5308	0.2827	+90	+14
82 Leonis	6.9	1.12	5.2	3 52.3	**5** 0 19.5	+ 7 58.5	−1.0550	0.5307	0.2827	−13	−86
83 Leonis	6.5	+1.11	−5.1	+ 3 34.7	0 24.5	+ 8 3.3	−0.7852	0.5304	−0.2827	+ 4	−77
τ Leonis	5.1	1.10	5.2	+ 3 25.6	1 24.1	+ 9 0.9	−0.9145	0.5302	0.2830	− 4	−87
B. A. C. 4134	6.3	0.77	4.8	− 3 22.7	**6** 1 21.3	+ 8 11.8	−0.8179	0.5282	0.2798	+ 1	−90
f Virginis	6.0	0.64	4.7	5 15.6	10 13.7	− 7 12.9	−1.3760	0.5290	0.2751	−44	−90
χ Virginis	5.2	0.60	4.1	7 25.5	11 23.5	− 6 5.4	+0.5002	0.5293	0.2744	+72	−18
28 Virginis	7.0	+0.60	−4.4	− 6 55.8	12 40.6	− 4 50.8	−0.3551	0.5297	−0.2735	+25	−64
ψ Virginis	5.2	0.51	4.1	8 58.6	18 32.2	+ 0 49.4	+0.1338	0.5309	0.2689	+49	−37
g Virginis	5.9	0.43	4.2	10 11.2	**7** 0 54.1	+ 6 58.9	−0.3309	0.5325	0.2632	+25	−63
50 Virginis	6.3	0.43	4.3	9 46.6	1 46.6	+ 7 49.7	−0.9790	0.5328	0.2625	−11	−90
62 Virginis	7.0	0.37	4.3	10 45.6	6 43.0	−11 23.7	−1.2620	0.5344	0.2572	−33	−90
i Virginis	5.7	+0.32	−4.0	−12 10.1	9 40.5	− 8 32.0	−0.5832	0.5357	−0.2539	+10	−81
83 Virginis	6.0	0.21	3.2	15 39.5	17 49.8	− 0 39.1	+0.9545	0.5389	0.2436	+74	+ 8
85 Virginis	6.5	+0.21	3.4	15 14.8	18 20.0	− 0 9.9	+0.4108	0.5391	0.2428	+61	−23
B. A. C. 4923	7.3	−0.17	3.9	20 56.8	**9** 2 7.8	+ 6 31.7	−0.6266	0.5556	0.1873	0	−88
42 Libræ	5.7	0.36	4.4	23 28.9	20 17.4	+ 0 1.6	−1.0410	0.5652	0.1453	−30	−90
B. A. C. 5197	6.0	−0.39	−4.3	−24 23.5	22 35.0	+ 2 14.1	−0.4211	0.5665	−0.1395	+ 5	−71
b Scorpii	5.3	0.42	4.2	25 26.2	**10** 0 42.1	+ 4 16.4	+0.3745	0.5675	0.1342	+46	−23
A^2 Scorpii	5.2	0.42	4.3	25 1.1	1 48.0	+ 5 19.8	−0.2064	0.5679	0.1313	+15	−56
B. A. C. 5253	5.8	0.42	4.6	24 13.5	1 55.9	+ 5 27.4	−1.0500	0.5679	0.1310	−32	−90
B. A. C. 5255	6.0	0.42	4.3	25 6.2	2 2.7	+ 5 34.0	−0.1510	0.5679	0.1308	+18	−53
3 Scorpii	6.7	−0.42	−4.4	−24 56.2	2 14.1	+ 5 45.0	−0.3486	0.5679	−0.1303	+ 8	−66
4 Scorpii	6.3	0.44	4.1	25 57.7	2 33.9	+ 6 4.0	+0.6750	0.5683	0.1294	+63	− 5
B. A. C. 5314	5.7	0.46	4.5	25 34.6	5 48.2	+ 9 11.0	−0.1303	0.5697	0.1209	+18	−52
B. A. C. 5347	6.0	0.48	4.5	26 2.9	7 45.1	+11 3.5	+0.1303	0.5705	0.1155	+31	−37
σ Scorpii	3.4	0.51	5.0	25 20.7	13 6.5	− 7 47.3	−1.1840	0.5724	0.1012	−47	−90
α Scorpii	1.2	−0.54	−5.1	−26 12.2	16 26.3	− 4 35.1	−0.6101	0.5733	−0.0919	− 9	−89
τ Scorpii	3.2	−0.57	−4.8	−28 0.1	19 1.8	− 2 5.6	+1.0430	0.5741	−0.0846	+62	+20

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
B. A. C. 5800	7.5	−0.64	− 6.2	−26 51.7	**11** 10 32.0	−11 11.2	−1.1210	0.5765	−0.0398	−46	−90
43 Ophiuchi	5.8	0.66	6.2	28 2.6	14 11.0	− 7 40.6	−0.0018	0.5769	0.0290	+16	−44
3 Sagittarii	4−6	0.69	6.9	27 47.6	23 57.2	+ 1 42.9	−0.4089	0.5758	−0.0002	− 7	−71
B. A. C. 6127	5.1	0.71	7.2	28 28.2	**12** 8 16.2	+ 9 42.9	+0.4102	0.5741	+0.0240	+39	−21
φ Sagittarii	3.7	0.71	8.4	27 6.0	23 46.6	+ 0 38.1	−0.3341	0.5678	0.0677	+ 3	−65
				NEW	*MOON.*						
Mercury				−18 42.1	**15** 14 27.6	−10 49.5	−0.5794	0.4667	+0.1757	+ 5	−82
η Capricorni	5.1	−0.50	− 8.5	20 15.1	14 29.3	−10 48.2	+1.1150	0.5217	0.2007	+70	+21
30 Capricorni	5.5	0.47	8.1	18 25.4	21 16.4	− 4 13.6	+0.5151	0.5172	0.2101	+64	−17
31 Capricorni	6.7	0.47	8.2	17 54.0	21 26.1	− 4 4.2	−0.0200	0.5165	0.2102	+35	−45
ι Capricorni	4.4	−0.46	− 8.1	−17 16.7	23 57.5	− 2 6.5	−0.2714	0.5150	+0.2129	+23	−60
42 Capricorni	5.6	0.41	7.4	14 30.8	**16** 9 25.3	+ 7 33.5	−1.1180	0.5079	0.2246	−24	−90
44 Capricorni	6.1	0.40	7.4	14 52.6	10 12.3	+ 8 19.2	−0.5445	0.5079	0.2255	+11	−78
45 Capricorni	6.3	0.40	7.4	15 13.7	10 41.6	+ 8 47.7	−0.0493	0.5072	0.2259	+36	−47
B. A. C. 7558	8.0	0.40	7.4	16 26.9	10 49.9	+ 8 55.7	+1.3190	0.5072	0.2260	+74	+40
μ Capricorni	5.2	−0.38	− 7.0	−14 2.6	15 33.8	−10 28.6	−0.2379	0.5039	+0.2308	+27	−57
ϵ^1 Aquarii	6.8	0.34	6.2	11 20.0	**17** 0 49.5	− 1 28.9	−1.0400	0.4979	0.2386	−16	−90
ϵ^2 Aquarii	5.6	0.33	6.3	12 4.7	0 52.2	− 1 26.3	−0.2106	0.4978	0.2386	+30	−56
B. A. C. 7740	7.0	0.33	6.2	11 34.8	1 46.5	− 0 33.4	−0.5429	0.4978	0.2395	+13	−78
40 Aquarii	7.0	0.32	6.3	12 26.5	2 23.1	+ 0 2.1	+0.5522	0.4973	0.2402	+71	−15
67 Aquarii	6.4	−0.25	− 4.4	− 7 30.5	18 50.7	− 7 57.5	−0.8460	0.4897	+0.2503	− 2	−90
B. A. C. 7986	5.9	0.22	3.6	5 32.6	**18** 1 34.1	− 1 24.9	−1.3260	0.4870	0.2531	−37	−90
B. A. C. 7993	6.6	0.21	3.5	5 22.1	2 45.6	− 0 15.3	−1.2160	0.4864	0.2536	−26	−90
B. A. C. 8017	6.1	0.19	3.3	5 16.4	5 9.5	+ 2 4.6	−0.7155	0.4859	0.2545	+ 6	−90
B. A. C. 8094	5.4	0.15	2.6	4 3.8	13 9.8	+ 9 52.3	−0.0055	0.4839	0.2567	+43	−44
11 Piscium	6.4	−0.10	− 1.7	− 2 21.9	21 7.2	− 6 22.9	+0.1607	0.4821	+0.2580	+53	−36
12 Piscium	6.8	0.11	1.5	1 36.6	21 9.3	− 6 20.9	−0.6668	0.4821	0.2580	+10	−87
13 Piscium	6.4	0.10	1.5	1 39.6	22 33.8	− 4 58.6	−0.2476	0.4819	0.2580	+31	−59
14 Piscium	5.9	0.09	1.4	− 1 49.3	23 48.9	− 3 45.5	+0.2531	0.4816	0.2583	+58	−31
21 Piscium	5.8	0.04	− 0.1	+ 0 29.9	**19** 8 38.5	+ 4 50.2	−0.0370	0.4811	0.2583	+42	−46
25 Piscium	6.4	−0.04	+ 0.3	+ 1 30.7	10 43.7	+ 6 52.1	−0.6227	0.4811	+0.2581	+12	−83
51 Piscium	5.8	+0.11	3.1	6 22.9	**20** 9 16.0	+ 4 48.8	−0.2474	0.4834	0.2528	+31	−56
101 Piscium	6.3	0.40	7.9	14 7.9	**21** 20 18.5	− 9 6.1	−0.2767	0.4975	0.2307	+30	−54
104 Piscium	7.5	0.42	7.9	13 45.6	22 9.7	− 7 18.1	+0.5567	0.4989	0.2290	+79	−11
4 Arietis	5.7	0.45	9.0	16 26.4	**22** 2 51.5	− 2 44.3	−1.3220	0.5019	0.2244	−40	−74
B. A. C. 549	8.2	+0.45	+ 9.0	+16 30.2	2 56.9	− 2 39.1	−1.3720	0.5019	+0.2242	−50	−73
ι Arietis	5.7	0.51	9.5	17 18.7	7 38.4	+ 1 54.2	−1.2140	0.5054	0.2193	−28	−73
23 Arietis	7.5	0.64	10.5	19 12.9	18 45.2	−11 18.9	−0.9251	0.5136	0.2057	− 7	−71
26 Arietis	6.0	0.72	10.7	19 23.8	**23** 0 28.2	− 5 46.3	+0.0326	0.5183	0.1980	+46	−33
μ Arietis	6.0	0.80	11.0	19 34.3	6 12.5	− 0 12.8	+0.9530	0.5217	0.1895	+90	+17
B. A. C. 920	7.0	+0.90	+11.7	+21 12.4	14 5.2	+ 7 24.8	+0.6234	0.5297	+0.1767	+88	0
ε Arietis	4.6	0.90	11.6	20 55.7	14 15.0	+ 7 34.2	+0.9528	0.5297	0.1763	+90	+19
64 Arietis	5.7	1.07	12.7	24 21.5	**24** 1 48.6	− 5 15.2	−0.8269	0.5406	0.1550	− 3	−66
7 Tauri	6.0	1.14	12.6	24 7.1	6 22.9	− 0 50.3	+0.1196	0.5443	0.1456	+51	−22
11 Tauri	6.7	1.20	12.8	24 59.8	9 11.0	+ 1 52.0	−0.4207	0.5470	0.1397	+21	−50
g Pleiadum	6.3	+1.22	+12.5	+23 57.9	10 58.9	+ 3 36.2	+0.9294	0.5487	+0.1357	+90	+23
17 Tauri	4.3	1.22	12.4	23 47.4	11 1.0	+ 3 38.2	+1.1219	0.5487	0.1357	+90	+37
18 Tauri	6.3	1.23	12.6	24 31.0	11 7.8	+ 3 44.7	+0.3596	0.5489	0.1355	+66	− 9
19 Tauri	5.0	1.22	12.5	24 8.6	11 9.4	+ 3 46.3	+0.7621	0.5491	0.1355	+90	+13
21 Tauri	7.0	1.23	12.5	24 14.0	11 27.8	+ 4 4.1	+0.7084	0.5498	0.1348	+90	+10
22 Tauri	7.0	+1.23	+12.5	+24 12.4	11 31.5	+ 4 7.6	+0.7459	0.5498	+0.1346	+90	+12
24 Tauri	8.0	1.23	12.4	23 47.8	12 6.3	+ 4 41.2	+1.2600	0.5498	0.1332	+90	+52
η Tauri	3.1	1.23	12.4	23 47.2	12 9.8	+ 4 44.6	+1.2770	0.5498	0.1332	+90	+54
1171 Tauri	7.8	1.25	12.4	24 1.7	12 36.3	+ 5 10.2	+1.0800	0.5507	0.1321	+90	+34
B. A. C. 1192	6.0	1.26	12.8	25 16.1	13 22.4	+ 5 54.6	−0.1440	0.5514	0.1305	+36	−34
p Tauri	6.0	+1.40	+12.8	+26 12.8	22 12.2	− 9 34.6	−0.0867	0.5589	+0.1098	+39	−28
φ Tauri	5.3	+1.47	+12.9	+27 6.3	**25** 2 12.6	− 5 42.9	−0.6103	0.5623	+0.0999	+10	−57

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
		s	"	° ′	d h m	h m				°	°
JANUARY.											
B. A. C. 1444	5.0	+1.63	+12.7	+28 25.0	**25** 10 52.8	+ 2 37.9	−1.2230	0.5697	+0.0770	−41	−62
W. iv, 1421	6.0	1.81	11.6	27 54.2	22 22.0	−10 19.4	+0.0192	0.5789	0.0444	+45	−17
22 Aurigæ	7.0	1.90	11.4	28 50.7	**26** 3 46.0	− 5 8.2	−0.7635	0.5813	0.0284	0	−61
β Tauri	1.8	1.91	11.2	28 31.4	4 55.1	− 4 1.8	−0.3971	0.5820	0.0250	+21	−37
B. A. C. 1772	6.3	2.01	10.6	29 9.5	10 0.5	+ 0 51.4	−0.9661	0.5846	+0.0095	−15	−61
136 Tauri	5.3	+2.06	+ 9.6	+27 35.4	15 29.7	+ 6 7.4	+0.6630	0.5870	−0.0076	+90	+20
49 Aurigæ	5.7	2.27	7.5	28 6.3	**27** 7 36.2	− 2 25.4	−0.4005	0.5910	0.0586	+21	−41
54 Aurigæ	6.0	2.30	7.1	28 21.4	9 16.1	− 0 49.5	−0.7595	0.5912	0.0639	0	−62
25 Geminorum	6.5	2.30	7.0	28 17.6	9 57.4	− 0 9.7	−0.7403	0.5910	0.0660	+ 1	−62
W. vi, 1656	8.2	2.36	5.4	26 59.5	18 35.9	+ 8 7.5	−0.0999	0.5909	0.0933	+38	−27
47 Geminorum	6.0	+2.39	+ 5.0	+27 1.7	21 30.4	+10 54.9	−0.4210	0.5907	−0.1021	+20	−46
49 Geminorum	7.2	2.37	4.7	25 55.4	22 4.7	+11 27.8	+0.6404	0.5905	0.1040	+90	+10
A Geminorum	5.7	2.38	3.9	25 15.1	**28** 2 11.9	− 8 34.9	+0.8652	0.5899	0.1165	+90	+21
c Geminorum	6.0	2.45	2.5	26 1.9	10 10.6	− 0 55.6	−0.9469	0.5872	0.1401	−11	−64
κ Geminorum	3.7	2.42	2.3	24 38.8	10 19.8	− 0 46.8	+0.4265	0.5872	0.1402	+71	− 5
μ^1 Cancri	6.3	+2.42	+ 0.7	+22 55.9	18 54.8	+ 7 27.7	+0.8392	0.5838	−0.1644	+90	+15
B. A. C. 2703	7.5	2.42	+ 0.7	22 45.4	19 1.7	+ 7 34.3	+0.9963	0.5838	0.1646	+90	+25
η Cancri	5.4	2.41	− 1.2	20 47.7	**29** 5 26.8	− 6 25.2	+1.0960	0.5785	0.1914	+90	+30
38 Cancri	7.0	2.40	1.8	20 8.7	8 16.3	− 3 52.2	+1.1920	0.5773	0.1982	+90	+37
39 Cancri	7.0	2.40	1.8	20 22.5	8 25.7	− 3 33.2	+0.9322	0.5768	0.1986	+90	+17
40 Cancri	7.3	+2.40	− 1.8	+20 20.3	8 27.8	− 3 31.2	+0.9625	0.5768	−0.1986	+90	+19
B. A. C. 2919	7.3	2.40	1.8	20 2.2	8 32.3	− 3 26.9	+1.2480	0.5768	0.1988	+90	+43
e Cancri	7.1	2.40	1.9	20 5.3	8 40.2	− 3 19.4	+1.1690	0.5768	0.1990	+90	+35
B. A. C. 2925	7.7	2.39	1.9	19 56.9	8 46.2	− 3 13.6	+1.2900	0.5768	0.1994	+90	+48
B. A. C. 2931	7.5	2.40	1.9	20 14.7	9 7.8	− 2 52.8	+0.9223	0.5768	0.2003	+90	+17
γ Cancri	4.9	+2.44	− 2.0	+21 50.5	9 41.7	− 2 20.2	−0.7843	0.5763	−0.2016	+ 1	−68
78 Cancri	7.8	2.35	3.8	17 53.3	20 16.9	+ 7 50.8	+0.8925	0.5703	0.2244	+90	+11
80 Cancri	6.8	2.36	4.0	18 28.1	21 28.7	+ 8 59.9	+0.0513	0.5689	0.2269	+47	−33
83 Cancri	5.7	2.35	4.4	18 8.7	**30** 0 24.7	+11 49.4	−0.3061	0.5671	0.2325	+28	−52
8 Leonis	5.7	2.30	5.7	16 54.1	8 1.4	− 4 50.7	−0.8933	0.5628	0.2459	− 5	−73
ψ Leonis	6.0	+2.25	− 6.0	+14 29.7	10 53.4	− 2 5.1	+0.7789	0.5608	−0.2503	+90	+ 5
23 Leonis	6.3	2.22	6.3	13 33.0	14 1.4	+ 0 56.1	+0.9223	0.5591	0.2552	+90	+10
ν Leonis	5.3	2.20	6.7	12 56.3	17 7.6	+ 3 55.8	+0.7288	0.5575	0.2595	+90	− 2
α Leonis	1.3	2.18	7.3	12 28.4	21 32.7	+ 8 11.2	+0.0280	0.5547	0.2653	+46	−39
44 Leonis	6.0	2.14	7.9	9 18.7	**31** 4 57.9	− 8 39.4	+1.1550	0.5512	0.2735	+90	+23
45 Leonis	6.0	+2.11	− 8.1	+10 17.4	6 1.0	− 7 38.5	−0.1005	0.5504	−0.2745	+39	−47
ρ Leonis	4.0	2.09	8.3	9 47.9	8 18.6	− 5 25.6	−0.2883	0.5496	0.2767	+29	−58
49 Leonis	6.0	2.08	8.4	9 11.2	9 18.4	− 4 28.0	+0.0824	0.5491	0.2774	+49	−38
37 Sextantis	6.3	2.02	8.7	6 55.2	14 15.4	+ 0 18.7	+0.9393	0.5468	0.2813	+90	+ 7
38 Sextantis	7.8	2.02	8.7	6 53.6	14 48.4	+ 0 50.6	+0.8125	0.5466	0.2816	+90	0
56 Leonis	6.0	+1.99	− 9.1	+ 6 44.2	18 43.6	+ 4 37.8	−0.1434	0.5449	−0.2841	+36	−51
c Leonis	5.3	+1.96	− 9.4	+ 6 39.4	20 51.6	+ 6 41.3	−0.6705	0.5439	−0.2853	+10	−83
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79 Leonis	6.0	+1.86	− 9.6	+ 1 58.5	**1** 7 28.7	− 7 3.1	+0.9095	0.5405	−0.2890	+90	+ 4
82 Leonis	6.9	1.87	9.9	3 52.2	8 13.0	− 6 20.3	−1.1800	0.5403	0.2891	−22	−86
83 Leonis	6.5	1.87	10.0	3 34.6	8 17.9	− 6 15.5	−0.9131	0.5403	0.2891	− 4	−86
τ Leonis	5.1	1.86	10.0	+ 3 25.5	9 15.5	− 5 19.9	−1.0400	0.5401	0.2893	−12	−87
B. A. C. 4134	6.3	1.59	10.4	− 3 22.8	**2** 8 25.3	− 6 56.3	−0.9668	0.5371	0.2850	+ 8	−90
χ Virginis	5.2	+1.46	− 9.8	− 7 25.6	18 9.1	+ 2 27.8	+0.3250	0.5376	−0.2792	+61	−27
28 Virginis	7.0	1.45	10.0	6 55.9	19 24.0	+ 3 40.2	−0.5184	0.5376	0.2781	+16	−75
ψ Virginis	5.2	1.38	9.8	8 58.7	**3** 1 5.5	+ 9 10.4	−0.0384	0.5384	0.2732	+40	−46
g Virginis	5.9	1.31	9.8	10 11.3	7 17.2	− 8 50.5	−0.4992	0.5395	0.2670	+16	−74
50 Virginis	6.3	1.31	10.0	9 46.7	8 8.3	− 8 1.2	−1.1380	0.5398	0.2656	−22	−90
i Virginis	5.7	+1.22	− 9.7	−12 10.2	15 50.5	− 0 34.6	−0.7499	0.5419	−0.2569	+ 1	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° ′	d h m	h m				°	°
75 Virginis	6.0	+1.18	− 9.0	−14 49.9	**3** 18 35.9	+ 2 6.2	+1.2360	0.5428	−0.2533	+75	+29
83 Virginis	6.0	1.14	8.8	15 39.6	23 49.1	+ 7 7.6	+0.7727	0.5442	0.2458	+71	− 4
85 Virginis	6.5	1.13	8.9	15 14.9	**4** 0 18.8	+ 7 36.4	+0.2346	0.5443	0.2450	+51	−32
B. A. C. 4923	7.3	0.80	8.1	20 56.8	**5** 7 39.4	−10 9.3	−0.7900	0.5572	0.1871	− 9	−90
42 Libræ	5.7	0.61	7.5	23 23.9	**6** 1 44.1	+ 7 15.7	−1.1860	0.5643	0.1443	−42	−90
B. A. C. 5197	6.0	+0.59	− 7.1	−24 23.5	4 1.6	+ 9 28.1	−0.5675	0.5650	−0.1387	− 2	−84
b Scorpii	5.3	0.57	7.0	25 26.2	6 8.7	+11 30.4	+0.2287	0.5657	0.1330	+38	−32
A^2 Scorpii	5.2	0.56	7.2	25 1.1	7 14.6	−11 26.2	−0.3499	0.5659	0.1301	+ 8	−66
B. A. C. 5253	5.8	0.56	7.4	24 13.5	7 22.5	−11 18.6	−1.1910	0.5663	0.1298	−44	−90
B. A. C. 5255	6.0	0.55	7.1	25 6.2	7 29.4	−11 12.0	−0.2929	0.5663	0.1297	+11	−62
3 Scorpii	7.7	+0.53	− 7.2	−24 56.2	7 40.7	−11 1.0	−0.4906	0.5665	−0.1291	+ 1	−77
4 Scorpii	6.3	0.55	6.9	25 57.7	8 0.6	−10 41.9	+0.5323	0.5665	0.1281	+55	−15
B. A. C. 5314	5.7	0.52	7.1	25 34.6	11 15.3	− 7 34.6	−0.2710	0.5675	0.1197	+11	−61
B. A. C. 5347	6.0	0.50	7.0	26 2.9	13 12.4	− 5 41.8	−0.0087	0.5683	0.1144	+24	−45
α Scorpii	1.2	0.41	7.0	26 12.2	21 55.9	+ 2 41.9	−0.7416	0.5705	0.0904	−17	−90
τ Scorpii	3.2	+0.39	− 6.5	−28 0.1	**7** 0 32.4	+ 5 12.4	+0.9158	0.5710	−0.0830	+62	+10
B. A. C. 5800	7.5	0.23	7.2	26 51.7	16 10.4	− 3 45.4	−1.2370	0.5722	0.0384	−57	−90
43 Ophiuchi	5.8	0.20	6.8	28 2.6	19 51.2	− 0 13.0	−0.1110	0.5718	−0.0277	+10	−51
3 Sagittarii	4.6	+0.12	7.0	27 47.6	**8** 5 45.0	+ 9 18.2	−0.5116	0.5706	+0.0009	−12	−79
φ Sagittarii	3.7	−0.04	7.3	27 6.0	**9** 5 54.6	+ 8 33.6	−0.4111	0.5622	0.0681	− 1	−71
σ Sagittarii	2.3	−0.06	− 7.4	−26 25.6	10 0.7	−11 39.3	−0.8324	0.5601	+0.0789	−23	−90
τ Sagittarii	3.6	0.08	7.1	27 49.4	14 59.8	− 6 40.9	+1.0940	0.5572	0.0916	+62	+25
ψ Sagittarii	5.4	0.10	7.5	25 26.2	18 46.0	− 3 2.9	−1.1100	0.5550	0.1011	−40	−90
h^1 Sagittarii	5–7	0.13	7.5	24 56.9	**10** 3 47.2	+ 5 39.2	−0.6323	0.5493	0.1225	− 6	−90
h^2 Sagittarii	4.7	0.13	7.5	25 6.9	4 4.9	+ 5 56.3	−0.4162	0.5493	0.1232	+ 4	−71
4 Capricorni	6.1	−0.18	− 7.6	−22 8.0	22 59.2	+ 0 12.2	−0.9353	0.5360	+0.1631	−20	−90
B. A. C. 7049	6.5	0.19	7.4	22 44.3	**11** 4 24.0	+ 5 26.4	+0.6336	0.5319	0.1732	+65	− 9
				NEW	*MOON.*						
B. A. C. 8094	5.4	0.24	3.3	4 3.8	**14** 20 19.6	− 5 10.4	+0.0592	0.4850	0.2581	+47	−41
11 Piscium	6.4	−0.24	− 2.6	− 2 21.8	**15** 4 16.6	+ 2 34.1	+0.2295	0.4834	+0.2594	+56	−33
12 Piscium	6.8	0.25	2.5	1 36.5	4 18.8	+ 2 36.2	−0.5995	0.4834	0.2594	+13	−82
13 Piscium	6.4	0.25	2.4	1 39.6	5 43.1	+ 3 58.4	−0.1758	0.4834	0.2595	+35	−54
14 Piscium	5.9	0.24	2.3	− 1 49.3	6 58.3	+ 5 11.5	+0.3275	0.4832	0.2596	+62	−27
21 Piscium	5.8	0.19	1.3	+ 0 29.9	15 47.3	−10 13.3	+0.0389	0.4823	0.2596	+46	−42
25 Piscium	6.4	−0.19	− 1.0	+ 1 30.7	17 52.4	− 8 11.6	−0.5445	0.4823	+0.2595	+16	−77
51 Piscium	5.8	−0.11	+ 1.4	6 22.9	**16** 16 24.9	−10 14.6	−0.1573	0.4843	0.2536	+36	−52
101 Piscium	6.3	+0.07	6.0	14 7.9	**18** 3 36.4	− 0 0.5	−0.1847	0.4969	0.2300	+34	−49
104 Piscium	7.5	0.10	6.0	13 45.6	5 28.8	+ 1 48.7	+0.6485	0.4976	0.2282	+88	− 6
4 Arietis	5.7	0.12	7.1	16 26.4	10 13.2	+ 6 25.1	−1.2350	0.5000	0.2237	−30	−74
ι Arietis	5.7	+0.16	+ 7.6	+17 18.7	15 3.1	+11 6.6	−1.1270	0.5030	+0.2182	−21	−73
B. A. C. 686	7.2	0.23	8.6	19 7.7	23 35.9	− 4 35.6	−1.3020	0.5084	0.2080	−40	−71
23 Arietis	7.5	0.27	8.8	19 12.8	**19** 2 18.1	− 1 58.3	−0.8373	0.5099	0.2045	− 2	−71
26 Arietis	6.0	0.33	9.1	19 23.8	8 6.2	+ 3 39.3	+0.1244	0.5142	0.1964	+51	−28
μ Arietis	6.0	0.41	9.5	19 34.3	13 56.1	+ 9 18.5	+1.0520	0.5186	0.1878	+90	+24
B. A. C. 920	7.0	+0.51	+10.3	+21 12.4	21 57.4	− 6 55.3	+0.7166	0.5247	+0.1748	+90	+ 5
ε Arietis	4.6	0.51	10.2	20 55.7	22 7.4	− 6 45.7	+1.0490	0.5247	0.1744	+90	+26
64 Arietis	5.7	0.66	11.7	24 21.5	**20** 9 55.3	+ 4 39.3	−0.7509	0.5342	0.1529	+ 2	−64
7 Tauri	6.0	0.73	11.6	24 7.1	14 35.8	+ 9 10.5	+0.2040	0.5384	0.1437	+56	−17
g Pleiadum	6.3	0.82	11.6	23 57.9	19 18.3	−10 16.5	+1.0210	0.5418	0.1339	+90	+29
17 Tauri	4.3	+0.82	+11.6	+23 47.4	19 20.4	−10 14.7	+1.2140	0.5420	+0.1339	+90	+46
18 Tauri	6.3	0.82	11.8	24 31.0	19 27.4	−10 8.0	+0.4448	0.5420	0.1335	+72	− 4
19 Tauri	5.0	0.82	11.7	24 8.6	19 29.1	−10 6.3	+0.8519	0.5420	0.1335	+90	+18
21 Tauri	7.0	0.82	11.7	24 14.0	19 47.9	− 9 47.9	+0.7960	0.5424	0.1327	+90	+15
22 Tauri	7.0	0.83	11.7	24 12.4	19 51.8	− 9 44.2	+0.8337	0.5424	0.1325	+90	+17
B. A. C. 1171	7.8	+0.84	+11.7	+24 1.7	20 58.1	− 8 40.2	+1.1710	0.5431	+0.1303	+90	+42

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
B. A. C. 1192	6.0	+0.85	+12.1	+25 16.1	**20** 21 45.4	- 7 54.5	-0.0666	0.5442	+0.1284	+40	-30
p Tauri	6.0	1.00	12.5	26 12.8	**21** 6 48.6	+ 0 49.7	-0.0107	0.5512	0.1079	+44	-24
φ Tauri	5.3	1.07	12.6	27 6.3	10 55.3	+ 4 47.6	-0.5448	0.5543	0.0980	+14	-53
B. A. C. 1444	5.7	1.24	12.8	28 25.0	19 49.8	-10 37.2	-1.1670	0.5608	0.0755	-33	-62
W. iv, 1421	6.0	1.45	11.9	27 54.2	**22** 7 38.6	+ 0 45.2	+0.0864	0.5687	0.0434	+49	-13
22 Aurigæ	7.0	+1.56	+11.9	+28 50.7	13 11.7	+ 6 5.6	-0.7115	0.5717	+0.0276	+ 3	-61
β Tauri	1.8	1.58	11.7	28 31.4	14 22.8	+ 7 14.0	-0.3424	0.5725	0.0242	+24	-35
B. A. C. 1772	6.3	1.69	11.4	29 9.5	19 36.9	-11 44.1	-0.9183	0.5750	+0.0089	-11	-61
136 Tauri	5.3	1.76	10.7	27 35.4	**23** 1 15.4	- 6 18.8	+0.7268	0.5775	-0.0080	+90	+23
49 Aurigæ	5.7	2.04	8.6	28 6.3	17 48.1	+ 9 34.8	-0.3583	0.5819	0.0582	+24	-38
54 Aurigæ	6.0	+2.09	+ 8.4	+28 21.4	19 30.4	+11 13.0	-0.7226	0.5821	-0.0635	+ 2	-62
25 Geminorum	6.5	2.10	8.2	28 17.6	20 12.8	+11 53.7	-0.7017	0.5824	0.0657	+ 4	-61
39 Geminorum	6.3	2.16	6.7	26 13.1	**24** 3 6.8	- 5 28.8	+0.9086	0.5828	0.0866	+90	+27
40 Geminorum	6.3	2.16	6.6	26 3.4	3 22.4	- 5 13.7	+1.0520	0.5829	0.0875	+90	+37
W. vi, 1656	8.2	2.19	6.6	26 59.5	5 3.9	- 3 36.4	-0.0598	0.5830	0.0925	+41	-25
47 Geminorum	6.0	+2.24	+ 6.2	+27 1.7	8 2.0	- 0 45.3	-0.3859	0.5828	-0.1014	+23	-44
49 Geminorum	7.2	2.22	5.8	25 55.4	8 37.4	- 0 11.3	+0.6855	0.5828	0.1031	+90	+13
A Geminorum	5.7	2.26	5.0	25 15.1	12 49.8	+ 3 51.1	+0.9078	0.5825	0.1156	+90	+24
c Geminorum	6.0	2.39	3.7	26 2.0	20 57.8	+11 39.7	-0.9212	0.5811	0.1390	- 9	-64
κ Geminorum	3.7	2.36	3.3	24 38.9	21 7.3	+11 49.8	+0.4615	0.5794	0.1395	+74	- 4
μ^1 Cancri	6.3	+2.41	+ 1.5	+22 55.9	**25** 5 50.7	- 3 48.1	+0.8708	0.5784	-0.1634	+90	+17
B. A. C. 2703	7.5	2.41	+ 1.4	22 45.4	5 57.7	- 3 41.4	+1.0270	0.5784	0.1637	+90	+27
η Cancri	5.4	2.46	- 0.7	20 47.7	16 30.4	+ 6 26.7	+1.1220	0.5749	0.1907	+90	+32
38 Cancri	7.0	2.46	1.5	20 8.7	19 21.6	+ 9 11.4	+1.2170	0.5736	0.1975	+90	+39
39 Cancri	7.0	2.47	1.5	20 22.5	19 31.0	+ 9 20.4	+0.9552	0.5733	0.1979	+90	+19
40 Cancri	7.3	+2.47	- 1.5	+20 20.3	19 33.1	+ 9 22.4	+0.9851	0.5733	-0.1982	+90	+21
B. A. C. 2919	7.3	2.46	1.6	20 2.2	19 37.7	+ 9 26.8	+1.2720	0.5733	0.1982	+90	+45
e Cancri	7.1	2.47	1.6	20 5.3	19 46.3	+ 9 35.0	+1.1920	0.5733	0.1986	+90	+37
B. A. C. 2925	7.7	2.46	1.6	19 56.9	19 51.7	+ 9 40.3	+1.3150	0.5733	0.1987	+90	+52
B. A. C. 2931	7.5	2.47	1.6	20 14.7	20 13.4	+10 1.1	+0.9450	0.5733	0.1996	+90	+18
γ Cancri	4.9	+2.51	- 1.4	+21 50.5	20 47.7	+10 34.1	-0.7663	0.5729	-0.2009	+ 2	-64
71 Cancri	8.0	2.48	3.7	17 48.2	**26** 6 4.9	- 4 29.8	+1.2960	0.5690	0.2216	+90	+45
78 Cancri	7.8	2.49	3.9	17 53.5	7 26.4	- 3 11.4	+0.9061	0.5685	0.2245	+90	+13
80 Cancri	6.8	2.51	4.0	18 28.1	8 38.4	- 2 2.1	+0.0613	0.5679	0.2269	+48	-32
83 Cancri	5.7	2.52	4.5	18 8.7	11 34.7	+ 0 47.6	-0.2943	0.5666	0.2326	+28	-51
7 Leonis	6.3	+2.47	- 6.2	+14 50.5	18 42.6	+ 7 39.7	+1.2690	0.5633	-0.2460	+90	+38
8 Leonis	5.7	2.51	6.0	16 54.1	19 10.6	+ 8 6.6	-0.8831	0.5632	0.2465	- 4	-73
11 Leonis	6.8	2.47	6.4	14 48.9	19 37.2	+ 8 32.2	+1.0710	0.5630	0.2473	+90	+21
ψ Leonis	6.0	2.48	6.8	14 29.7	22 2.1	+10 51.8	+0.7834	0.5610	0.2513	+90	+ 2
23 Leonis	6.3	2.47	7.3	13 33.0	**27** 1 9.2	-10 7.8	+0.9237	0.5606	0.2563	+90	+10
ν Leonis	5.3	+2.47	- 7.8	+12 56.3	4 14.1	- 7 9.6	+0.7288	0.5594	-0.2608	+90	- 2
α Leonis	1.3	2.47	8.5	12 28.4	8 36.9	- 2 56.4	+0.0292	0.5574	0.2670	+46	-39
44 Leonis	6.0	2.43	9.7	9 18.6	15 56.8	+ 4 7.8	+1.1450	0.5549	0.2757	+90	+22
45 Leonis	6.0	2.44	9.8	10 17.3	16 59.1	+ 5 7.9	-0.1030	0.5546	0.2770	+39	-47
ρ Leonis	4.0	2.44	10.1	9 50.3	19 14.7	+ 7 18.8	-0.2877	0.5537	0.2790	+29	-57
49 Leonis	6.0	+2.43	-10.3	+ 9 11.1	20 13.5	+ 8 15.4	+0.0784	0.5531	-0.2802	+48	-38
37 Sextantis	6.3	2.39	11.0	6 55.1	**28** 1 5.6	-11 2.8	+0.9258	0.5517	0.2843	+90	+ 6
38 Sextantis	7.8	2.39	11.1	6 53.5	1 38.0	-10 31.5	+0.7986	0.5517	0.2847	+90	- 2
56 Leonis	6.6	2.39	11.5	6 44.2	5 28.6	- 6 49.0	-0.1501	0.5504	0.2876	+36	-51
ι Leonis	5.3	2.38	11.8	6 39.4	7 34.1	- 4 48.0	-0.6756	0.5501	0.2888	+ 9	-83
75 Leonis	5.7	+2.33	-12.5	+ 2 34.7	14 55.7	+ 2 18.4	+1.1760	0.5483	-0.2922	+90	+21
79 Leonis	6.0	2.31	12.8	1 18.5	17 56.4	+ 5 12.7	+0.8857	0.5480	0.2934	+90	+ 2
82 Leonis	6.9	2.31	12.9	3 52.2	18 39.5	+ 5 54.4	-1.1800	0.5480	0.2934	-22	-86
83 Leonis	6.5	2.31	12.9	3 34.6	18 44.3	+ 5 59.0	-0.9166	0.5480	0.2934	- 4	-86
τ Leonis	5.1	2.32	13.0	+ 3 25.7	19 40.5	+ 6 53.2	-1.0420	0.5478	0.2938	-12	-87
B. A. C. 4134	6.3	+2.18	-14.4	- 3 22.8	**29** 18 8.7	+ 4 34.9	-0.9727	0.5471	-0.2905	- 8	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
irginis	5.2	+2.09	−14.4	− 7 25.6	**1** 3 32.4	−10 20.9	+0.2966	0.5480	−0.2846	+59	−29
irginis	7.0	2.09	14.4	6 55.9	4 44.7	− 9 11.1	−0.5328	0.5481	0.2841	+16	−76
irginis	5.2	2.04	14.5	8 58.7	10 13.9	− 3 53.3	−0.0624	0.5493	0.2787	+39	−47
irginis	5.9	2.00	14.5	10 11.3	16 12.0	+ 1 52.2	−0.5119	0.5505	0.2724	+15	−75
irginis	6.3	2.00	14.7	9 46.7	17 1.3	+ 2 39.3	−1.1420	0.5508	0.2715	−22	−90
irginis	5.7	+1.95	−14.4	−12 10.2	**2** 0 26.4	+ 9 48.7	−0.7600	0.5529	−0.2622	+ 1	−90
irginis	6.0	1.92	13.9	14 49.9	3 5.5	−11 37.4	+1.1900	0.5535	0.2584	+75	+25
irginis	6.0	1.89	13.7	15 39.6	8 7.2	− 6 46.5	+0.7345	0.5554	0.2508	+74	− 5
irginis	6.5	1.89	13.8	15 14.9	8 35.7	− 6 19.0	+0.2056	0.5554	0.2500	+49	−33
A. C. 4722	5.8	1.83	13.5	17 43.1	21 19.4	+ 5 57.1	−0.3739	0.5601	0.2275	+17	−66
A. C. 4923	7.3	+1.68	−12.3	−20 56.9	**3** 14 50.0	− 1 11.1	−0.7977	0.5665	−0.1903	−90	− 9
ibræ	5.7	1.55	11.1	23 29.0	**4** 8 21.8	− 8 19.1	−1.1870	0.5724	0.1462	−42	−90
A. C. 5197	6.0	1.53	10.7	24 23.6	10 35.7	− 6 10.4	−0.5771	0.5728	0.1402	− 3	−84
corpii	5.3	1.51	10.3	25 26.3	12 39.5	− 4 11.3	+0.2103	0.5733	0.1347	+37	−32
corpii	5.2	1.50	10.4	25 1.2	13 43.7	− 3 9.6	−0.3606	0.5733	0.1317	+ 8	−67
A. C. 5253	5.8	+1.50	−10.6	−24 13.6	13 51.3	− 3 2.3	−1.1910	0.5734	−0.1314	−44	−90
A. C. 5255	6.0	1.50	10.4	25 6.3	13 58.0	− 2 55.9	−0.3046	0.5734	0.1311	+11	−63
corpii	6.7	1.50	10.4	24 56.3	14 9.1	− 2 45.2	−0.4996	0.5736	0.1305	0	−77
corpii	6.3	1.50	10.1	25 57.8	14 28.5	− 2 26.5	+0.5100	0.5736	0.1297	+53	−16
A. C. 5314	5.7	1.46	10.1	25 34.7	17 38.4	+ 0 36.0	−0.2813	0.5744	0.1209	+11	−61
A. C. 5347	6.0	+1.45	− 9.9	−26 3.0	19 32.7	+ 2 25.9	−0.0223	0.5746	−0.1155	+23	−45
corpii	1.2	1.37	9.5	26 12.3	**5** 4 4.5	+10 38.0	−0.7456	0.5757	0.0911	−17	−90
corpii	3.2	1.36	8.8	28 0.2	6 37.9	−10 54.6	+0.8937	0.5759	0.0837	+62	+ 9
phiuchi	5.8	1.15	8.2	28 2.6	**6** 1 38.7	+ 7 21.9	−0.1225	0.5744	−0.0276	+10	−51
agittarii	4-6	1.03	7.5	27 47.6	11 25.6	− 7 13.8	−0.5153	0.5719	+0.0011	−12	−80
A. C. 6127	5.1	+0.98	− 6.8	−28 28.2	19 47.5	+ 0 48.9	+0.3093	0.5689	+0.0251	+34	−26
A. C. 6194	5.1	0.93	7.0	27 4.7	23 55.6	+ 4 48.0	−1.0420	0.5670	0.0367	−40	−90
agittarii	3.7	0.82	6.4	27 6.0	**7** 11 28.2	− 8 5.5	−0.4153	0.5610	0.0683	− 1	−71
agittarii	2.3	0.78	6.4	26 25.6	15 34.2	− 4 8.4	−0.8392	0.5588	0.0789	−23	−90
agittarii	3.6	0.74	5.7	27 49.4	20 33.5	+ 0 40.1	+1.0860	0.5555	0.0915	+62	+24
agittarii	5.4	+0.70	− 6.2	−25 26.2	**8** 0 20.1	+ 4 18.6	−1.1120	0.5531	+0.1008	−40	−90
agittarii	5-7	0.62	5.9	24 56.9	9 23.1	−10 57.5	−0.6337	0.5466	0.1221	− 7	−90
agittarii	4.7	0.62	5.8	25 6.9	9 41.0	−10 40.2	−0.4178	0.5466	0.1228	+ 4	−71
apricorni	6.1	0.45	5.6	22 8.0	**9** 4 41.8	+ 7 42.2	−0.9380	0.5326	0.1622	−20	−90
A. C. 7049	6.5	0.41	5.1	22 44.3	10 9.0	−11 1.2	+0.6325	0.5288	0.1722	+65	− 9
apricorni	6.0	+0.36	− 4.9	−21 53.2	18 13.7	− 3 11.9	+1.1560	0.5228	+0.1858	+68	+25
apricorni	6.3	0.29	5.2	19 26.4	**10** 0 54.9	+ 3 16.9	−0.2466	0.5181	0.1962	+22	−58
apricorni	5.1	0.29	4.9	20 16.1	3 18.6	+ 5 36.1	+1.1350	0.5165	0.1996	+70	+21
apricorni	5.5	0.24	4.9	18 25.4	10 12.4	−11 42.5	+0.5202	0.5122	0.2091	+64	−16
apricorni	6.7	0.24	5.0	17 54.0	10 22.2	−11 33.0	−0.0201	0.5119	0.2093	+35	−45
apricorni	4.4	+0.22	− 4.9	−17 16.7	12 25.6	− 9 33.4	−0.2712	0.5106	+0.2120	+23	−59
ENUS				15 11.4	21 11.5	− 1 2.9	−0.6649	0.4517	0.2065	+ 5	−90
apricorni	5.6	0.15	4.8	14 30.8	22 31.8	+ 0 15.1	−1.1140	0.5046	0.2240	−24	−90
apricorni	6.1	0.15	4.8	14 52.6	23 19.4	+ 1 1.3	−0.5346	0.5041	0.2247	+11	−78
apricorni	6.3	0.15	4.7	15 13.7	23 49.0	+ 1 30.1	−0.0349	0.5036	0.2253	+36	−46
A. C. 7558	8.0	+0.16	− 4.7	−16 26.9	23 57.6	+ 1 38.4	+1.3370	0.5036	+0.2255	+74	+42
apricorni	5.2	0.12	4.6	14 2.6	**11** 4 44.8	+ 6 17.4	−0.2207	0.5008	0.2303	+28	−56
ERCURY				14 21.6	7 29.8	+ 8 57.6	−0.7676	0.4444	0.2188	+72	− 5
quarii	6.8	0.07	4.3	11 20.0	14 6.3	− 8 37.0	−1.0200	0.4964	0.2386	−14	−90
quarii	5.6	0.07	4.3	12 4.7	14 9.0	− 8 34.4	−0.1844	0.4964	0.2386	+31	−54
quarii	7.0	+0.07	− 4.3	−12 26.5	15 40.8	− 7 5.1	+0.5825	0.4958	+0.2398	+73	−14
				NEW	*MOON.*						
scium	5.8	−0.17	+ 0.5	+ 6 22.9	**14** 22 41.3	− 2 10.8	−0.1946	0.4857	0.2542	+34	−54
scium	6.3	0.13	4.3	14 7.9	**16** 9 49.0	+ 7 59.5	−0.2340	0.4966	0.2297	+32	−51
scium	7.5	−0.12	+ 4.5	+13 45.6	11 41.3	+ 9 48.6	+0.6020	0.4974	+0.2277	+83	−10

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
4 Arietis	5.7	−0.12	+ 5.0	+16 26.4	**16** 16 25.6	− 9 35.1	−1.2920	0.5016	+0.2237	−36	−74
B. A. C. 549	8.2	0.12	5.0	16 30.2	16 31.1	− 9 29.8	−1.3420	0.5016	0.2236	−44	−73
ι Arietis	5.7	0.10	5.5	17 18.7	21 18.7	− 4 50.4	−1.1880	0.5043	0.2183	−26	−73
B. A. C. 686	7.2	0.05	6.3	19 7.7	**17** 5 49.6	+ 3 25.6	−1.3670	0.5093	0.2078	−54	−71
23 Arietis	7.5	−0.03	6.6	19 12.8	8 32.1	+ 6 3.2	−0.9012	0.5110	0.2044	− 6	−71
26 Arietis	6.0	+0.02	+ 7.2	+19 23.7	14 21.4	+11 42.1	+0.0643	0.5151	+0.1962	+48	−31
μ Arietis	6.0	0.08	7.7	19 34.2	20 13.0	− 6 37.1	+0.9942	0.5187	0.1873	+90	+20
B. A. C. 920	7.0	0.15	8.5	21 12.3	**18** 4 17.4	+ 1 12.2	+0.6551	0.5241	0.1740	+90	+ 2
ε Arietis	4.6	0.15	8.5	20 55.6	4 27.4	+ 1 21.8	+0.9900	0.5242	0.1739	+90	+22
64 Arietis	5.7	0.26	9.9	24 21.5	16 22.0	−11 6.5	−0.8273	0.5323	0.1530	− 3	−66
7 Tauri	6.0	+0.32	+10.0	+24 7.1	21 5.8	− 6 32.0	+0.1338	0.5359	+0.1427	+52	−21
11 Tauri	6.7	0.35	10.4	24 59.8	**19** 0 0.0	− 3 43.6	−0.4200	0.5380	0.1368	+21	−50
g Pleiadum	6.3	0.39	10.2	23 57.9	1 52.0	− 1 55.2	+0.9552	0.5392	0.1327	+90	+25
17 Tauri	4.3	0.39	10.1	23 47.4	1 54.2	− 1 53.2	+1.1520	0.5392	0.1327	+90	+40
18 Tauri	6.3	0.39	10.3	24 31.0	2 1.3	− 1 46.4	+0.3759	0.5394	0.1324	+67	− 8
19 Tauri	5.0	+0.39	+10.2	+24 8.6	2 2.9	− 1 44.8	+0.7845	0.5394	+0.1324	+90	+14
21 Tauri	7.0	0.40	10.3	24 14.0	2 22.0	− 1 26.3	+0.7305	0.5395	0.1317	+90	+11
22 Tauri	7.0	0.40	10.3	24 12.4	2 25.9	− 1 22.6	+0.7681	0.5395	0.1316	+90	+13
24 Tauri	8.0	0.41	10.1	23 47.8	3 2.0	− 0 47.7	+1.2920	0.5400	0.1303	+90	+57
B. A. C. 1171	7.8	0.41	10.2	24 1.7	3 33.2	− 0 17.5	+1.1080	0.5405	0.1292	+90	+36
B. A. C. 1192	6.0	+0.42	+10.6	+25 16.1	4 21.1	+ 0 28.7	−0.1416	0.5409	+0.1276	+36	−34
p Tauri	6.0	0.54	11.1	26 12.8	13 33.1	+ 9 21.8	−0.0868	0.5473	0.1069	+39	−28
φ Tauri	5.3	0.60	11.5	27 6.3	17 44.4	−10 35.7	−0.6277	0.5499	0.0969	+ 9	−58
B. A. C. 1444	5.7	0.75	11.9	28 25.0	**20** 2 49.8	− 1 49.6	−1.2600	0.5555	0.0747	−48	−62
W. iv, 1421	6.0	0.95	11.4	27 54.2	14 55.2	+ 9 49.4	+0.0054	0.5620	0.0427	+44	−17
22 Aurigæ	7.0	+1.05	+11.5	+28 50.7	20 37.1	− 8 41.4	−0.8009	0.5644	+0.0270	− 3	−61
β Tauri	1.8	1.07	11.4	28 31.4	21 50.2	− 7 31.0	−0.4251	0.5652	0.0237	+20	−40
B. A. C. 1772	6.3	1.19	11.3	29 9.5	**21** 3 13.2	− 2 20.2	−1.0130	0.5674	+0.0086	−19	−61
136 Tauri	5.3	1.28	10.4	27 35.4	9 1.7	+ 3 15.2	+0.6557	0.5692	−0.0080	+90	+19
49 Aurigæ	5.7	1.58	9.3	28 6.3	**22** 2 6.0	− 4 19.6	−0.4442	0.5722	0.0572	+19	−44
54 Aurigæ	6.0	+1.63	+ 9.1	+28 21.4	3 51.7	− 2 37.9	−0.8125	0.5724	−0.0624	− 3	−62
25 Geminorum	6.5	1.64	9.0	28 17.6	4 35.6	− 1 55.6	−0.7927	0.5724	0.0644	− 2	−62
39 Geminorum	6.3	1.72	7.5	26 13.1	11 43.9	+ 4 55.9	+0.8447	0.5725	0.0850	+90	+23
40 Geminorum	6.3	1.73	7.5	26 3.4	11 59.8	+ 5 11.6	+0.9888	0.5725	0.0857	+90	+32
W. vi, 1656	8.2	1.77	7.6	26 59.5	13 44.8	+ 6 52.5	−0.1406	0.5724	0.0908	+36	−29
47 Geminorum	6.0	+1.82	+ 7.2	+27 1.7	16 49.4	+ 9 50.1	−0.4714	0.5724	−0.0995	+18	−49
49 Geminorum	7.2	1.81	6.8	25 55.4	17 25.7	+10 25.0	+0.6165	0.5722	0.1011	+90	+ 9
A Geminorum	5.7	1.87	6.0	25 15.1	21 47.0	− 9 23.7	+0.8443	0.5715	0.1132	+90	+20
ε Geminorum	6.0	2.01	5.0	26 2.0	**23** 6 12.1	− 1 18.0	−1.0130	0.5702	0.1356	−16	−64
κ Geminorum	3.7	1.99	4.6	24 38.9	6 21.9	− 1 8.6	+0.3925	0.5702	0.1366	+69	− 7
μ^1 Cancri	6.3	+2.08	+ 2.7	+22 55.9	15 23.5	+ 7 32.6	+0.8106	0.5680	−0.1601	+90	+14
B. A. C. 2703	7.5	2.08	2.6	22 45.4	15 30.6	+ 7 39.4	+0.9709	0.5680	0.1604	+90	+24
η Cancri	5.4	2.18	+ 0.4	20 47.7	**24** 2 24.6	− 5 51.0	+1.0690	0.5649	0.1870	+90	+28
38 Cancri	7.0	2.21	− 0.4	20 8.7	5 21.3	− 3 0.8	+1.1680	0.5639	0.1937	+90	+35
39 Cancri	7.0	2.21	0.4	20 22.5	5 31.1	− 2 51.4	+0.9028	0.5639	0.1941	+90	+16
40 Cancri	7.3	+2.21	− 0.4	+20 20.3	5 33.2	− 2 49.4	+0.9383	0.5639	−0.1941	+90	+18
B. A. C. 2919	7.3	2.21	0.5	20 2.2	5 37.9	− 2 44.9	+1.2240	0.5636	0.1942	+90	+40
ε Cancri	7.2	2.20	0.5	19 54.7	5 40.1	− 2 42.8	+1.3420	0.5636	0.1944	+90	+60
e Cancri	7.1	2.21	0.5	20 5.3	5 46.8	− 2 36.4	+1.1420	0.5636	0.1947	+90	+32
B. A. C. 2925	7.7	2.21	0.5	19 56.9	5 52.3	− 2 31.0	+1.2660	0.5636	0.1948	+90	+45
B. A. C. 2931	7.5	+2.22	− 0.5	+20 14.7	6 14.7	− 2 9.5	+0.8927	0.5635	−0.1957	+90	+15
γ Cancri	4.9	2.26	0.1	21 50.5	6 50.2	− 1 35.3	−0.8429	0.5635	0.1969	− 3	−68
71 Cancri	8.0	2.28	2.8	17 48.3	16 24.4	+ 7 37.9	+1.2470	0.5601	0.2177	+90	+39
78 Cancri	7.8	2.29	2.9	17 53.4	17 48.2	+ 8 58.6	+0.8572	0.5597	0.2203	+90	+10
80 Cancri	6.8	2.32	3.0	18 28.2	19 2.3	+10 10.0	−0.0084	0.5593	0.2227	+44	−36
83 Cancri	5.7	+2.34	− 3.5	+18 8.7	22 3.6	−10 55.3	−0.3547	0.5582	−0.2286	+25	−55

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° ′	d h m	h m				°	°
7 Leonis	6.3	+2.33	- 5.5	+14 50.5	**25** 5 22.8	- 3 51.9	+1.2290	0.5559	-0.2417	+90	+33
8 Leonis	5.7	2.34	5.1	16 54.1	5 51.5	- 3 24.2	-0.9441	0.5556	0.2424	- 8	-73
11 Leonis	6.8	2.34	5.7	14 48.9	6 18.7	- 2 58.3	+1.0300	0.5554	0.2432	+90	+18
ψ Leonis	6.0	2.36	6.1	14 29.7	8 47.2	- 0 34.9	+0.7398	0.5546	0.2474	+90	0
23 Leonis	6.3	2.37	6.8	13 33.0	11 58.5	+ 2 29.7	+0.8847	0.5538	0.2523	+90	+ 7
ν Leonis	5.3	+2.38	- 7.3	+12 56.3	15 7.2	+ 5 31.7	+0.6873	0.5530	-0.2571	+90	- 4
α Leonis	1.3	2.40	8.1	12 28.4	19 35.6	+ 9 50.6	-0.0116	0.5517	0.2634	+43	-40
44 Leonis	6.0	2.41	9.7	9 18.6	**26** 3 3.2	- 6 57.5	+1.1200	0.5500	0.2726	+90	+20
45 Leonis	6.0	2.43	9.6	10 17.3	4 6.4	- 5 56.5	-0.1350	0.5495	0.2735	+37	-49
ρ Leonis	4.0	2.44	10.0	9 50.3	6 24.0	- 3 43.6	-0.3208	0.5494	0.2761	+27	-59
49 Leonis	6.0	+2.43	-10.3	+ 9 11.1	7 23.7	- 2 46.1	+0.0477	0.5493	-0.2770	+47	-40
37 Sextantis	6.3	2.42	11.5	6 55.1	12 19.4	+ 1 59.3	+0.9042	0.5486	0.2816	+90	+ 5
38 Sextantis	7.8	2.43	11.5	6 53.5	12 52.2	+ 2 31.0	+0.7761	0.5483	0.2820	+90	- 3
56 Leonis	6.6	2.45	12.0	6 44.2	16 45.0	+ 6 15.8	-0.1720	0.5479	0.2851	+37	-52
c Leonis	5.3	2.45	12.3	6 39.4	18 51.6	+ 8 17.9	-0.6958	0.5476	0.2865	+ 8	-83
75 Leonis	5.7	+2.43	-13.6	+ 2 34.7	**27** 2 15.7	- 8 33.3	+1.1680	0.5473	-0.2906	+90	+21
79 Leonis	6.0	2.43	14.0	1 58.5	5 17.1	- 5 38.2	+0.8798	0.5473	0.2917	+90	+ 2
82 Leonis	6.9	2.45	13.9	3 52.2	6 0.3	- 4 56.5	-1.1870	0.5473	0.2920	-22	-86
83 Leonis	6.5	2.45	13.9	3 34.6	6 5.1	- 4 51.9	-0.9239	0.5473	0.2920	- 4	-86
τ Leonis	5.1	2.45	14.0	+ 3 25.5	7 1.3	- 3 57.6	-1.0470	0.5471	0.2921	-12	-87
B. A. C. 4134	6.3	+2.47	-16.5	- 3 22.9	**28** 5 23.2	- 6 22.3	-0.9456	0.5503	-0.2910	- 6	-90
χ Virginis	5.2	2.42	17.1	7 25.7	14 39.7	+ 2 34.6	+0.3273	0.5530	0.2860	+59	-27
28 Virginis	7.0	2.42	17.2	6 56.0	15 50.8	+ 3 43.2	-0.4934	0.5533	0.2849	+18	-73
ψ Virginis	5.2	2.41	17.4	8 58.8	21 14.5	+ 8 55.5	-0.0196	0.5550	0.2806	+41	-45
g Virginis	5.9	2.41	17.6	10 11.4	**29** 3 5.6	- 9 25.9	-0.4616	0.5572	0.2748	+18	-71
50 Virginis	6.3	+2.41	-17.6	- 9 46.8	3 53.8	- 8 39.5	-1.0830	0.5575	-0.2737	-18	-90
62 Virginis	7.0	2.40	17.7	10 45.8	8 26.0	- 4 17.1	-1.3490	0.5595	0.2683	-44	-90
i Virginis	5.7	2.40	17.6	12 10.3	11 8.8	- 1 40.2	-0.6944	0.5603	0.2647	+ 5	-90
75 Virginis	6.0	2.39	17.5	14 50.0	13 44.1	+ 0 49.5	+1.2370	0.5615	0.2610	+75	+29
83 Virginis	6.0	2.39	17.3	15 39.7	18 37.9	+ 5 32.5	+0.7927	0.5636	0.2535	+74	- 2
85 Virginis	6.5	+2.39	-17.3	-15 15.0	19 5.7	+ 5 59.2	+0.2704	0.5639	-0.2527	+52	-30
B. A. C. 4722	5.8	2.38	16.9	17 43.2	**30** 7 27.8	- 6 6.4	-0.2914	0.5699	0.2306	+21	-16
B. A. C. 4923	7.3	2.36	15.7	20 57.0	**31** 0 24.1	+10 11.1	-0.6891	0.5779	0.1931	- 4	-90
B. A. C. 5197	6.0	2.33	13.6	24 23.6	19 29.0	+ 4 30.9	-0.4599	0.5839	0.1423	- 4	-74
b Scorpii	5.3	2.33	13.2	25 26.3	21 28.4	+ 6 25.5	+0.3161	0.5848	0.1367	+42	-27
A² Scorpii	5.2	+2.32	-13.2	-25 1.2	22 30.5	+ 7 25.1	-0.2474	0.5849	-0.1336	+14	-58
B. A. C. 5253	5.8	2.31	13.4	24 13.6	22 37.9	+ 7 32.2	-1.0650	0.5849	0.1332	-34	-90
B. A. C. 5255	6.0	2.32	13.2	25 6.3	22 44.3	+ 7 38.3	-0.1918	0.5849	0.1329	+16	-55
3 Scorpii	6.7	2.31	13.2	24 56.3	22 55.0	+ 7 48.7	-0.3836	0.5849	0.1324	+ 6	-68
4 Scorpii	6.3	+2.32	-12.9	-25 57.8	23 13.7	+ 8 6.6	+0.6092	0.5849	-0.1316	+59	-10
APRIL.											
B. A. C. 5314	5.7	+2.30	-12.8	-25 34.7	**1** 2 17.0	+11 2.5	-0.1669	0.5854	-0.1226	+16	-54
B. A. C. 5347	6.0	2.29	12.5	26 3.0	4 7.4	-11 11.5	+0.0912	0.5860	0.1171	+29	-39
σ Scorpii	3.4	+2.25	-12.2	-25 20.8	9 11.9	- 6 19.3	-1.1810	0.5865	-0.1025	-46	-90
α Scorpii	1.2	2.24	11.7	26 12.3	12 21.8	- 3 17.0	-0.6163	0.5865	0.0922	-10	-90
τ Scorpii	3.2	2.25	10.9	28 0.2	14 50.0	- 0 54.8	+0.9965	0.5868	0.0847	+62	+16
B. A. C. 5800	7.5	2.10	9.6	26 51.8	**2** 5 42.8	-10 37.9	-1.0920	0.5856	0.0387	-44	-90
43 Ophiuchi	5.8	2.08	9.2	28 2.6	9 14.6	- 7 14.5	+0.0086	0.5837	-0.0277	+17	-43
3 Sagittarii	4-6	+2.00	- 7.8	-27 47.6	18 44.7	+ 1 53.0	-0.3780	0.5803	+0.0014	- 5	-68
B. A. C. 6127	5.1	1.93	6.7	28 28.2	**3** 2 53.2	+ 9 42.3	+0.4376	0.5765	0.0256	+39	-19
B. A. C. 6194	5.1	1.87	6.6	27 4.7	6 55.5	-10 24.8	-0.8900	0.5741	0.0374	-30	-90
φ Sagittarii	3.7	1.75	5.3	27 6.0	18 12.2	+ 0 26.1	-0.2748	0.5669	0.0689	+ 6	-61
σ Sagittarii	2.3	1.70	5.1	26 25.6	22 13.3	+ 4 18.2	-0.6904	0.5641	0.0796	-14	-90
τ Sagittarii	3.6	+1.67	- 4.1	-27 49.4	**4** 3 7.0	+ 9 1.1	+1.2150	0.5603	+0.0923	+62	+39
ψ Sagittarii	5.4	+1.61	- 4.5	-25 26.2	6 49.7	-11 24.4	-0.9658	0.5575	+0.1015	-29	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
h^1 Sagittarii	5-7	+1.50	− 3.7	−24 56.9	**4** 15 44.3	− 2 48.8	−0.4907	0.5499	+0.1226	+ 1	−77
h^2 Sagittarii	4.7	1.49	3.7	25 6.9	16 1.8	− 2 32.0	−0.2749	0.5499	0.1233	+12	−61
4 Capricorni	6.1	1.25	2.8	22 7.9	**5** 10 50.2	− 8 21.9	−0.7968	0.5340	0.1622	−11	−90
B. A. C. 7049	6.5	1.21	2.1	22 44.2	16 14.9	− 3 7.8	+0.7626	0.5297	0.1720	+64	− 2
17 Capricorni	6.0	1.08	1.6	21 53.5	**6** 0 16.7	+ 4 38.5	+1.2820	0.5240	0.1854	+68	+41
20 Capricorni	6.3	+1.02	− 2.0	−19 26.3	6 56.2	+11 5.5	−0.1200	0.5180	+0.1955	+28	−51
η Capricorni	5.1	1.01	1.5	20 15.0	9 19.3	−10 35.8	+1.2380	0.5162	0.1990	+70	+33
30 Capricorni	5.5	0.92	1.5	18 25.3	16 12.2	− 3 55.3	+0.6407	0.5117	0.2081	+70	−10
31 Capricorni	6.7	0.92	1.6	17 53.9	16 21.8	− 3 46.0	+0.1022	0.5110	0.2083	+41	−38
ι Capricorni	4.4	0.89	1.6	17 16.6	18 25.1	− 1 46.5	−0.1479	0.5099	0.2108	+29	−52
42 Capricorni	5.6	+0.78	− 1.7	−14 30.7	**7** 4 31.1	+ 8 1.8	−0.9970	0.5035	+0.2225	−15	−90
44 Capricorni	6.1	0.77	1.6	14 52.5	5 18.7	+ 8 48.1	−0.4199	0.5030	0.2233	+17	−69
45 Capricorni	6.3	0.77	1.4	15 13.6	5 48.3	+ 9 16.9	+0.0770	0.5025	0.2240	+42	−40
μ Capricorni	5.2	0.72	1.4	14 2.5	10 44.4	− 9 55.5	−0.1120	0.4998	0.2288	+33	−50
MARS				13 40.6	17 11.4	− 3 39.5	+0.9840	0.4634	0.2230	+76	+ 9
e^1 Aquarii	6.8	+0.62	− 1.4	−11 19.9	20 6.5	− 0 49.3	−0.9166	0.4949	+0.2369	− 7	−90
e^2 Aquarii	5.6	0.63	1.1	12 4.6	20 9.2	− 0 46.7	−0.0847	0.4949	0.2369	+36	−48
B. A. C. 7740	7.0	0.62	1.2	11 34.7	21 4.2	+ 0 6.9	−0.4189	0.4946	0.2377	+19	−69
40 Aquarii	7.0	0.62	0.9	12 26.4	21 41.0	+ 0 42.6	+0.6813	0.4944	0.2435	+78	− 9
67 Aquarii	6.4	0.45	1.0	7 30.4	**8** 14 17.7	− 7 8.0	−0.7297	0.4878	0.2488	+ 5	−90
B. A. C. 7986	5.9	+0.39	− 0.9	− 5 32.5	21 3.7	− 0 32.8	−1.2140	0.4860	+0.2520	−26	−90
B. A. C. 7993	6.6	0.38	0.9	5 22.0	22 15.6	+ 0 37.2	−1.1060	0.4860	0.2524	−18	−90
B. A. C. 8017	6.1	0.37	0.7	5 16.3	**9** 0 40.0	+ 2 57.8	−0.6032	0.4854	0.2534	+13	−82
B. A. C. 8094	5.4	0.31	0.3	4 3.7	8 42.2	+10 47.2	+0.1000	0.4838	0.2560	+49	−39
11 Piscium	6.4	0.25	0.1	2 21.8	16 40.6	− 5 27.0	+0.2593	0.4829	0.2573	+58	−31
12 Piscium	6.8	+0.24	− 0.2	− 1 36.5	16 42.7	− 5 25.0	−0.5706	0.4829	+0.2573	+15	−79
13 Piscium	6.4	0.24	− 0.1	1 39.6	18 7.3	− 4 2.5	−0.1519	0.4829	0.2575	+36	−52
14 Piscium	5.9	0.24	0.0	− 1 49.3	19 22.5	− 2 49.3	+0.3521	0.4829	0.2577	+64	−26
21 Piscium	5.8	0.17	+ 0.3	+ 0 29.9	**10** 4 11.9	+ 5 46.2	+0.0482	0.4829	0.2580	+47	−41
25 Piscium	6.4	+0.15	0.3	1 30.7	6 17.0	+ 7 47.9	−0.5431	0.4828	0.2578	+16	−77
				NEW	*MOON.*						
μ Arietis	6.0	−0.03	+ 6.4	+19 34.2	**14** 1 57.9	+ 0 55.2	+0.8802	0.5214	+0.1868	+90	+13
B. A. C. 920	7.0	0.00	7.0	21 12.3	10 0.0	+ 8 42.2	+0.5326	0.5266	0.1737	+79	− 5
ε Arietis	4.6	0.00	7.0	20 55.6	10 10.0	+ 8 51.9	+0.8674	0.5266	0.1733	+90	+14
64 Arietis	5.7	+0.05	8.1	24 21.4	22 1.7	− 3 39.4	−0.9632	0.5346	0.1514	−12	−66
7 Tauri	6.0	+0.09	+ 8.3	+24 7.0	**15** 2 44.8	+ 0 54.4	−0.0073	0.5386	+0.1421	+44	−28
11 Tauri	6.7	0.12	8.7	24 59.7	5 38.6	+ 3 42.3	−0.5641	0.5406	0.1359	+13	−58
g Pleiadum	6.3	0.14	8.6	23 57.8	7 30.5	+ 5 30.5	+0.8112	0.5424	0.1320	+90	+16
17 Tauri	4.3	0.14	8.5	23 47.3	7 32.6	+ 5 32.5	+1.0110	0.5424	0.1318	+90	+29
18 Tauri	6.3	0.14	8.7	24 31.0	7 39.7	+ 5 39.4	+0.2274	0.5416	0.1317	+57	−15
19 Tauri	5.0	+0.14	+ 8.6	+24 8.6	7 41.3	+ 5 41.0	+0.6384	0.5416	+0.1315	+90	+ 6
20 Tauri	5.0	0.14	8.6	24 2.5	7 58.3	+ 5 57.4	+0.7856	0.5418	0.1311	+90	+14
21 Tauri	7.0	0.14	8.6	24 14.0	8 0.5	+ 5 59.5	+0.5820	0.5418	0.1311	+85	+ 3
22 Tauri	7.0	0.15	8.6	24 12.4	8 4.3	+ 6 3.1	+0.6201	0.5418	0.1310	+90	+ 5
23 Tauri	4.7	0.15	8.6	23 37.6	8 12.5	+ 6 11.0	+1.2720	0.5419	0.1306	+90	+53
24 Tauri	8.0	+0.15	+ 8.6	+23 47.8	8 40.4	+ 6 38.0	+1.1460	0.5423	+0.1296	+90	+39
η Tauri	3.1	0.16	8.6	23 47.2	8 44.0	+ 6 41.5	+1.1650	0.5423	0.1294	+90	+41
B. A. C. 1171	7.8	0.16	8.6	24 1.7	9 11.5	+ 7 8.1	+0.9601	0.5425	0.1280	+90	+26
B. A. C. 1192	6.0	0.16	8.9	25 16.1	9 59.4	+ 7 54.3	−0.2890	0.5433	0.1267	+28	−41
p Tauri	6.0	0.24	9.4	26 12.8	19 11.4	− 7 12.5	−0.2482	0.5488	0.1060	+30	−37
φ Tauri	5.3	+0.29	+ 9.7	+27 6.3	23 23.0	− 3 9.8	−0.7907	0.5513	+0.0961	− 2	−63
χ Tauri	5.7	0.30	9.4	25 23.2	**16** 0 23.7	− 2 11.2	+1.1700	0.5521	0.0937	+90	+46
W. iv, 1421	6.0	0.57	10.2	27 54.2	20 39.9	− 6 38.6	−0.1742	0.5614	0.0418	+34	−27
22 Aurigæ	7.0	0.65	10.4	28 50.7	**17** 2 24.8	− 1 6.3	−0.9904	0.5633	0.0263	−17	−61
β Tauri	1.8	0.67	10.3	28 31.4	3 38.6	+ 0 4.8	−0.6139	0.5637	0.0229	+ 9	−53
B. A. C. 1772	6.3	+0.76	+10.3	+29 9.5	9 5.2	+ 5 19.3	−1.2090	0.5653	+0.0079	−40	−61
136 Tauri	5.3	+0.84	+ 9.7	+27 35.4	14 58.1	+10 50.1	+0.1684	0.5663	−0.0085	+76	+

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
urigæ	5.7	+1.11	+ 9.0	+28 6.3	**18** 8 19.7	+ 3 41.6	-0.6501	0.5676	-0.0572	+ 7	-57
urigæ	6.0	1.15	9.0	28 21.4	10 7.6	+ 5 25.5	-1.0220	0.5676	0.0620	-19	-62
eminorum	6.5	1.16	8.9	28 17.6	10 52.3	+ 6 8.5	-1.0020	0.5676	0.0642	-17	-62
eminorum	6.3	1.25	7.7	26 13.1	18 9.7	-10 50.5	+0.6504	0.5667	0.0844	+90	+12
eminorum	6.3	1.26	7.6	26 3.4	18 26.3	-10 34.5	+0.7940	0.5667	0.0851	+90	+20
. vi, 1656	8.2	+1.29	+ 7.8	+26 59.5	20 13.8	- 8 51.1	-0.3477	0.5666	-0.0899	+24	-41
eminorum	6.0	1.34	7.5	27 1.7	23 22.8	- 5 49.1	-0.6819	0.5661	0.0985	+ 5	-61
eminorum	7.2	1.34	7.1	25 55.4	**19** 0 0.0	- 5 13.2	+0.4188	0.5659	0.1001	+71	- 2
eminorum	5.7	1.40	6.4	25 15.1	4 28.0	- 0 55.2	+0.6504	0.5649	0.1120	+90	+ 9
eminorum	6.0	1.55	5.8	26 2.0	13 7.1	+ 7 24.7	-1.2340	0.5627	0.1344	-39	-64
eminorum	3.7	+1.53	+ 5.3	+24 38.9	13 17.2	+ 7 34.4	+0.1897	0.5626	-0.1347	+56	-17
ancri	6.3	1.64	3.7	22 56.0	22 35.0	- 7 28.2	+0.6130	0.5599	0.1575	+87	+ 2
A. C. 2703	7.5	1.64	3.6	22 45.5	22 42.4	- 7 21.1	+0.7756	0.5598	0.1579	+90	+11
ancri	5.4	1.77	1.6	20 47.7	**20** 9 57.6	+ 3 29.6	+0.8824	0.5556	0.1835	+90	+15
A. C. 2907	8.8	1.79	0.9	19 57.4	12 45.9	+ 6 11.9	+1.2210	0.5547	0.1894	+90	+40
ancri	7.0	+1.80	+ 0.9	+20 8.7	13 0.2	+ 6 25.7	+0.9806	0.5547	-0.1901	+90	+21
ancri	7.0	1.80	1.0	20 22.5	13 10.4	+ 6 35.6	+0.7127	0.5547	0.1904	+90	+ 5
ancri	7.3	1.80	0.9	20 20.3	13 12.6	+ 6 37.7	+0.7435	0.5547	0.1904	+90	+ 6
A. C. 2919	7.3	1.80	0.8	20 2.2	13 17.5	+ 6 42.4	+1.0370	0.5546	0.1905	+90	+24
ancri	7.2	1.80	0.8	19 54.7	13 19.7	+ 6 44.5	+1.1590	0.5546	0.1907	+90	+34
ancri	7.1	+1.80	+ 0.8	+20 5.3	13 26.6	+ 6 51.1	+0.9563	0.5544	-0.1909	+90	+19
A. C. 2925	7.7	1.80	0.8	19 56.9	13 32.4	+ 6 56.7	+1.0810	0.5544	0.1913	+90	+28
A. C. 2931	7.5	1.81	0.8	20 14.7	13 55.5	+ 7 19.0	+0.7020	0.5542	0.1919	+90	+ 4
ancri	4.9	1.85	+ 1.3	21 50.5	14 32.2	+ 7 54.4	-1.0600	0.5540	0.1932	-18	-68
ancri	8.0	1.90	- 1.4	17 48.3	**21** 0 26.4	- 6 32.3	+1.0720	0.5503	0.2129	+90	+24
ancri	7.8	+1.92	- 1.5	+17 53.4	1 53.2	- 5 8.6	+0.6728	0.5494	-0.2155	+90	+ 0
ancri	6.8	1.95	1.5	18 28.2	3 10.0	- 3 54.5	-0.1976	0.5493	0.2181	+33	-46
ancri	5.7	1.98	2.0	18 8.8	6 17.8	- 0 53.3	+0.5577	0.5483	0.2237	+14	-66
eonis	6.3	2.00	4.2	14 50.5	13 52.7	+ 6 25.9	+1.0630	0.5462	0.2365	+90	+20
eonis	5.7	2.04	3.6	16 54.1	14 22.4	+ 6 54.6	-1.1480	0.5458	0.2372	-23	-73
eonis	6.8	+2.01	- 4.3	+14 48.9	14 50.6	+ 7 21.7	+0.8594	0.5456	-0.2380	+90	+ 6
eonis	6.0	2.03	4.8	14 29.7	17 24.4	+ 9 50.3	+0.5662	0.5448	0.2418	+80	-10
eonis	6.3	2.05	5.5	13 33.0	20 42.6	-10 58.3	+0.7169	0.5441	0.2468	+90	- 2
eonis	5.3	2.08	6.1	12 56.3	23 58.4	- 7 49.2	+0.5220	0.5429	0.2513	+76	-12
eonis	1.3	2.11	6.8	12 28.4	**22** 4 36.0	- 3 21.0	-0.1865	0.5420	0.2574	+34	-50
eonis	6.0	+2.16	- 8.7	+ 9 18.7	12 19.2	+ 4 6.4	+0.9707	0.5406	-0.2663	+90	+11
eonis	6.0	2.18	8.5	10 17.4	13 24.5	+ 5 9.5	-0.3011	0.5405	0.2675	+28	-58
eonis	4.0	2.19	8.9	9 50.3	15 46.8	+ 7 27.1	-0.4861	0.5401	0.2699	+19	-69
eonis	6.0	2.19	9.2	9 11.1	16 48.5	+ 8 26.7	-0.1085	0.5399	0.2708	+38	-47
xtantis	6.3	2.23	10.6	6 55.1	21 53.9	-10 38.2	+0.7683	0.5398	0.2754	+90	- 3
xtantis	7.8	+2.24	-10.7	+ 6 53.5	22 28.1	-10 5.1	+0.6380	0.5395	-0.2758	+85	-10
eonis	6.6	2.28	11.2	6 44.2	**23** 2 27.9	- 6 13.4	-0.3159	0.5393	0.2788	+28	-60
eonis	5.3	2.30	11.4	6 39.4	4 38.4	- 4 7.3	-0.8416	0.5380	0.2797	0	-83
eonis	5.7	2.31	13.3	2 34.7	12 15.7	+ 3 14.7	+1.0590	0.5396	0.2845	+90	+14
eonis	6.3	2.32	13.5	2 13.0	13 0.8	+ 3 58.2	+1.2050	0.5396	0.2849	+90	+25
eonis	6.0	+2.34	-13.7	+ 1 58.5	15 22.0	+ 6 14.7	+0.7725	0.5399	-0.2859	+90	- 4
eonis	6.9	2.36	13.3	3 52.2	16 6.4	+ 6 57.6	-1.3190	0.5400	0.2861	-35	-86
eonis	6.5	2.36	13.4	3 34.6	16 11.3	+ 7 2.4	-1.0520	0.5400	0.2861	-13	-86
eonis	5.1	2.37	13.5	+ 3 25.5	17 9.0	+ 7 58.1	-1.1770	0.5401	0.2864	-22	-87
A. C. 4134	6.3	2.46	17.0	- 3 22.9	**24** 16 1.1	+ 6 3.8	-1.0200	0.5456	0.2863	-11	-90
rginis	5.2	+2.49	-18.1	- 7 25.7	**25** 1 26.2	- 8 50.7	+0.2870	0.5495	-0.2818	+58	-29
rginis	7.0	2.50	18.1	6 56.0	2 38.3	- 7 41.1	-0.5378	0.5499	0.2809	+15	-77
rginis	5.2	2.52	18.6	8 58.8	8 5.7	- 2 25.1	-0.0475	0.5526	0.2770	+39	-46
rginis	5.9	2.56	18.9	10 11.4	13 59.8	+ 3 16.5	-0.4767	0.5555	0.2715	+17	-72
rginis	6.3	2.56	18.9	9 46.8	14 48.5	+ 4 3.4	-1.1030	0.5560	0.2707	-20	-90
rginis	5.7	+2.60	-19.2	-12 10.3	22 5.7	+11 4.9	-0.6916	0.5601	-0.2628	+ 4	-90
rginis	6.0	+2.61	-19.4	-14 50.0	**26** 0 41.4	-10 25.0	+1.2500	0.5615	-0.2586	+75	+31

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

The Star's					At Conjunction in R. A.					Li Pa
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.
		Δα	Δδ							
		APRIL.								
		s	"	° '	d h m	h m				°
83 Virginis	6.0	+2.66	-19.4	-15 39.7	**26** 5 35.5	- 5 41.7	+0.8149	0.5645	-0.2517	+74
85 Virginis	6.5	2.66	19.4	15 15.0	6 3.2	- 5 15.0	+0.2935	0.5648	0.2508	+54
B. A. C. 4722	5.8	2.73	19.2	17 43.2	18 22.5	+ 6 36.6	-0.2367	0.5727	0.2291	+24
B. A. C. 4923	7.3	2.83	18.4	20 57.0	**27** 11 9.2	- 1 15.7	-0.5995	0.5826	0.1925	+ 1
42 Libræ	5.7	2.91	16.2	23 29.1	**28** 3 48.5	- 9 16.3	-0.9313	0.5909	0.1482	-23
B. A. C. 5197	6.0	+2.92	-15.8	-24 23.7	5 55.0	- 7 14.9	-0.3313	0.5917	-0.1422	+ 9
b Scorpii	5.3	2.94	15.5	25 26.4	7 52.1	- 5 22.6	+0.4433	0.5923	0.1365	+50
A^2 Scorpii	5.2	2.93	15.4	25 1.3	8 52.8	- 4 24.4	-0.1117	0.5924	0.1336	+20
B. A. C. 5253	5.8	2.92	15.5	24 13.7	9 0.0	- 4 17.5	-0.9221	0.5928	0.1332	-24
B. A. C. 5255	6.0	2.93	15.3	25 6.4	9 6.3	- 4 11.5	-0.0567	0.5928	0.1329	+23
3 Scorpii	6.7	+2.93	-15.4	-24 56.4	9 16.8	- 4 1.4	-0.2468	0.5928	-0.1324	+15
4 Scorpii	6.3	2.95	15.2	25 57.9	9 35.1	- 3 43.8	+0.7372	0.5928	0.1314	+63
B. A. C. 5314	5.7	2.94	14.8	25 34.7	12 34.5	- 0 51.8	-0.0284	0.5936	0.1225	+23
B. A. C. 5347	6.0	2.96	14.4	26 3.0	14 22.4	+ 0 51.7	+0.2291	0.5941	0.1170	+36
σ Scorpii	3.4	2.93	14.0	25 20.8	19 20.0	+ 5 37.0	-1.0230	0.5943	0.1017	-34
α Scorpii	1.2	+2.94	-13.4	-26 12.3	22 25.3	+ 8 34.7	-0.4585	0.5957	-0.0920	- 2
τ Scorpii	3.2	2.97	12.7	28 0.2	**29** 0 49.9	+10 53.2	+1.1440	0.5958	0.0845	+62
B. A. C. 5800	6.5	2.91	10.5	26 51.8	15 19.7	+ 0 47.0	-0.8995	0.5946	0.0380	-31
43 Ophiuchi	5.8	2.92	9.7	28 2.7	18 45.8	+ 4 4.7	+0.1939	0.5936	-0.0269	+27
3 Sagittarii	4-6	2.87	8.0	27 47.6	**30** 4 0.2	-11 3.6	-0.1780	0.5903	+0.0026	+ 5
B. A. C. 6127	5.1	+2.83	- 6.5	-28 28.2	11 55.2	- 3 27.8	+0.6383	0.5860	+0.0270	+55
B. A. C. 6194	5.1	+2.77	- 6.2	-27 4.9	15 50.7	+ 0 18.3	-0.6674	0.5837	+0.0390	-18
		MAY.								
ϕ Sagittarii	3.7	+2.68	- 4.2	-27 6.0	**1** 2 48.9	+10 50.7	-0.0486	0.5758	+0.0709	+18
σ Sagittarii	2.3	2.63	3.7	26 25.5	6 43.5	- 9 23.7	-0.4565	0.5728	0.0816	- 2
ψ Sagittarii	5.4	2.53	2.6	25 26.1	15 6.4	- 1 19.8	-0.7201	0.5656	0.1035	-14
h^1 Sagittarii	5-7	2.43	1.4	24 56.8	23 47.8	+ 7 2.5	-0.2450	0.5580	0.1247	+13
h^2 Sagittarii	4.7	+2.43	- 1.3	-25 6.8	**2** 0 4.9	+ 7 18.9	-0.0317	0.5577	+0.1253	+24
4 Capricorni	6.1	2.15	+ 0.4	22 7.9	18 28.0	+ 1 3.5	-0.5330	0.5403	0.1640	+ 3
B. A. C. 7049	6.5	2.11	1.4	22 44.2	23 46.2	+ 6 11.1	+1.0100	0.5355	0.1736	+67
20 Capricorni	6.3	1.88	2.0	19 26.3	**3** 14 12.1	- 3 50.9	+0.1423	0.5225	0.1968	+42
θ Capricorni	4.1	1.82	1.7	17 38.8	17 20.8	- 0 48.1	-1.1710	0.5195	0.2012	-32
30 Capricorni	5.5	+1.77	+ 2.8	-18 25.3	23 20.0	+ 5 0.1	+0.8960	0.5147	+0.2090	+72
31 Capricorni	6.7	1.76	2.6	17 53.9	23 29.6	+ 5 9.5	+0.3620	0.5146	0.2092	+46
ι Capricorni	4.4	1.71	2.6	17 16.6	**4** 1 31.0	+ 7 7.0	+0.1123	0.5133	0.2117	+42
42 Capricorni	5.6	1.58	2.7	14 30.7	11 29.7	- 7 12.0	-0.7297	0.5056	0.2229	0
44 Capricorni	6.1	1.57	2.8	14 52.5	12 16.8	- 6 26.3	-0.1584	0.5053	0.2238	+30
45 Capricorni	6.3	+1.57	+ 3.0	-15 13.6	12 46.7	- 5 57.2	+0.3386	0.5051	+0.2243	+56
μ Capricorni	5.2	1.51	3.1	14 2.4	17 39.2	- 1 13.2	+0.1459	0.5019	0.2289	+47
e^1 Aquarii	6.8	1.38	3.3	11 19.8	**5** 2 56.6	+ 7 48.4	-0.6643	0.4963	0.2366	+ 6
e^2 Aquarii	5.6	1.39	3.3	12 4.5	2 59.3	+ 7 51.0	+0.1647	0.4963	0.2366	+49
B. A. C. 7740	7.0	1.37	3.3	11 34.6	3 53.8	+ 8 44.0	-0.1702	0.4957	0.2372	+32
40 Aquarii	7.0	+1.38	+ 3.6	-12 26.3	4 30.6	+ 9 19.7	+0.9245	0.4943	+0.2379	+78
67 Aquarii	6.4	1.15	3.3	7 30.3	21 1.2	+ 1 23.2	-0.4929	0.4883	0.2477	+17
B. A. C. 7986	5.9	1.07	3.3	5 22.4	**6** 3 45.5	+ 7 56.5	-0.9833	0.4860	0.2504	-10
B. A. C. 7993	6.6	1.06	3.3	5 21.9	4 57.2	+ 9 6.3	-0.8790	0.4859	0.2505	- 3
B. A. C. 8017	6.1	1.04	3.5	5 16.2	7 21.3	+11 26.6	-0.3796	0.4851	0.2520	+24
B. A. C. 8094	5.4	+0.96	+ 3.8	- 4 3.6	15 22.1	- 4 45.4	+0.3101	0.4834	+0.2542	+60
11 Piscium	6.4	0.88	3.9	2 21.7	23 19.5	+ 2 59.4	+0.4563	0.4826	0.2554	+70
12 Piscium	6.8	0.87	3.7	1 36.4	23 21.6	+ 3 1.4	-0.3714	0.4826	0.2556	+25
13 Piscium	6.4	0.86	3.8	1 39.5	**7** 0 46.0	+ 4 23.6	+0.0462	0.4826	0.2556	+46
14 Piscium	5.9	0.85	3.9	- 1 49.2	2 1.0	+ 5 36.6	+0.5434	0.4825	0.2558	+76
21 Piscium	5.8	+0.76	+ 3.8	+ 0 30.0	10 49.8	- 9 48.4	+0.2256	0.4823	+0.2561	+56

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
ie.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
m	6.4	+0.74	+3.7	+ 1 30.8	**7** 12 54.7	− 7 46.9	−0.3662	0.4823	+0.2558	+25	−64
n	5.8	0.55	4.0	6 23.0	**8** 11 22.0	− 9 53.0	−0.0703	0.4864	0.2508	+40	−46
m	6.3	0.30	4.9	14 7.9	**9** 22 15.4	+ 0 0.9	−0.2450	0.5016	0.2280	+31	−52
m	7.5	0.30	5.0	13 45.6	**10** 0 6.6	+ 1 48.9	+0.5855	0.5024	0.2262	+81	− 9
	5.7	0.26	5.0	16 26.4	4 48.0	+ 6 22.3	−1.3240	0.5053	0.2215	+42	−74
. 549	8.2	+0.26	+5.0	+16 30.2	4 53.5	+ 6 27.6	−1.3740	0.5056	+0.2215	−52	−73
	5.7	0.24	5.1	17 18.7	9 34.8	+11 0.7	−1.2370	0.5082	0.2163	−32	−73
	7.5	0.21	5.6	19 12.8	20 43.0	− 2 11.0	−0.9956	0.5159	0.2024	−12	−71
				NEW	*MOON.*						
1421	6.0	+0.46	+8.8	+27 54.1	**14** 2 19.6	+ 0 48.5	−0.3312	0.5654	+0.0403	+25	−37
e	7.0	0.51	8.9	28 50.6	8 1.8	+ 6 18.0	−1.1540	0.5671	0.0246	−33	−61
	1.8	0.52	8.9	28 31.3	9 15.1	+ 7 28.6	−0.7805	0.5675	+0.0212	− 2	−61
	5.3	0.64	8.6	27 35.3	20 30.1	− 5 41.7	+0.2827	0.5696	−0.0101	+61	− 1
e	5.7	0.84	8.1	28 6.3	**15** 13 47.9	+10 57.3	−0.8624	0.5701	0.0588	− 7	−62
e	6.0	+0.87	+8.1	+28 21.4	15 35.7	−11 19.0	−1.2380	0.5697	−0.0638	−44	−62
orum	6.5	0.88	8.1	28 17.6	16 20.3	−10 36.1	−1.2200	0.5696	0.0659	−41	−62
orum	6.3	0.96	7.2	26 13.1	23 37.7	− 3 35.1	+0.4226	0.5682	0.0857	+73	0
orum	6.3	0.96	7.2	26 3.4	23 54.3	− 3 19.1	+0.5703	0.5682	0.0864	+86	+ 7
1656	8.2	0.99	7.2	26 59.5	**16** 1 41.9	− 1 35.6	−0.5751	0.5679	0.0913	+11	−55
orum	6.0	+1.03	+7.1	+27 1.7	4 51.4	+ 1 26.9	−0.9154	0.5670	−0.1000	−11	−63
orum	7.2	1.03	6.7	25 55.4	5 28.7	+ 2 2.8	+0.1862	0.5669	0.1014	+55	−14
. 2363	7.3	1.03	6.4	24 53.5	6 10.5	+ 2 43.0	+1.2020	0.5667	0.1032	+90	+49
orum	6.3	1.03	6.5	25 4.0	6 16.6	+ 2 48.9	+1.0080	0.5667	0.1036	+90	+32
orum	5.7	1.08	6.2	25 15.1	9 57.5	+ 6 21.6	+0.4120	0.5654	0.1131	+70	− 3
orum	3.7	+1.19	+5.4	+24 38.9	18 49.5	− 9 6.0	−0.0577	0.5622	−0.1356	+40	−30
orum	6.3	1.20	4.8	23 24.0	20 35.7	− 7 23.6	+1.0060	0.5615	0.1398	+90	+28
	6.3	1.27	3.9	22 21.8	**17** 3 9.2	− 1 4.4	+1.1190	0.5586	0.1555	+90	+35
	6.3	1.29	4.0	22 56.0	4 12.1	− 0 3.7	+0.3585	0.5584	0.1579	+66	−11
. 2703	7.5	1.29	4.0	22 45.5	4 19.6	+ 0 3.5	+0.5222	0.5581	0.1582	+78	− 2
. 2788	6.0	+1.34	+2.9	+21 4.6	10 18.3	+ 5 49.3	+1.2860	0.5555	−0.1715	+90	+51
	5.4	1.40	2.3	20 47.7	15 42.7	+11 2.2	+0.6200	0.5527	0.1831	+87	0
	6.3	1.40	2.0	19 56.8	16 52.3	−11 50.6	+1.2880	0.5524	0.1854	+90	+49
. 2907	8.8	1.43	1.7	19 57.4	18 33.5	−10 13.1	+0.9601	0.5513	0.1889	+90	+19
	7.0	1.44	1.8	20 8.7	18 48.0	− 9 59.0	+0.7196	0.5513	0.1892	+90	+ 5
	7.0	+1.44	+1.8	+20 22.5	18 58.3	− 9 49.1	+0.4481	0.5513	−0.1898	+71	−10
	7.3	1.44	1.8	20 20.3	19 0.6	− 9 46.9	+0.4792	0.5513	0.1898	+73	− 8
. 2919	7.3	1.44	1.7	20 2.2	19 5.5	− 9 42.2	+0.7766	0.5513	0.1900	+90	+ 8
	7.2	1.44	1.6	19 54.7	19 7.8	− 9 40.0	+0.8995	0.5513	0.1900	+90	+15
	7.1	1.44	1.7	20 5.3	19 14.9	− 9 33.1	+0.6936	0.5513	0.1902	+90	+ 3
. 2925	7.7	+1.44	+1.6	+19 56.9	19 20.7	− 9 27.5	+0.8198	0.5513	−0.1904	+90	+10
. 2931	7.5	1.45	1.7	20 14.7	19 44.2	− 9 4.9	+0.4376	0.5511	0.1913	+71	−10
	4.9	1.48	+2.1	21 50.5	20 21.4	− 8 29.0	−1.3390	0.5507	0.1924	−54	−68
	8.0	1.54	−0.2	17 48.3	**18** 6 25.8	+ 1 14.5	+0.8041	0.5462	0.2113	+90	+ 6
	7.8	1.56	0.1	17 53.4	7 54.2	+ 2 39.8	+0.4042	0.5453	0.2140	+68	−15
	6.8	+1.59	−0.3	+18 28.2	9 12.5	+ 3 55.4	−0.4746	0.5449	−0.2163	+19	−61
	5.7	1.62	0.8	18 8.8	12 24.0	+ 7 0.3	−0.8401	0.5436	0.2218	− 2	−72
	6.3	1.66	2.8	14 50.6	20 8.9	− 9 30.5	+0.7927	0.5403	0.2337	+90	+ 4
	6.8	1.67	2.9	14 49.0	21 8.2	− 8 33.2	+0.5869	0.5398	0.2352	+82	− 8
	6.0	1.70	3.3	14 29.8	23 45.6	− 6 1.1	+0.2940	0.5386	0.2300	+60	−23
	6.3	+1.73	−4.0	+13 33.0	**19** 3 8.7	− 2 44.7	+0.4473	0.5374	−0.2436	+71	−16
	5.3	1.76	4.6	12 56.3	6 29.4	+ 0 29.4	+0.2507	0.5367	0.2479	+58	−27
	1.3	1.81	5.3	12 28.4	11 14.3	+ 5 4.8	−0.4646	0.5351	0.2535	+19	−66
	6.0	1.86	7.2	9 18.7	19 10.5	−11 14.7	+0.7125	0.5331	0.2619	+90	− 5
	6.0	1.88	6.9	10 17.4	20 17.7	−10 9.7	−0.5763	0.5326	0.2629	+14	−75
	4.0	+1.91	−7.3	+ 9 47.9	22 44.0	− 7 48.1	−0.7218	0 5325	−0.2652	+ 6	−80

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.					Lin Par
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N
		s	″	° ′	d h m	h m				
49 Leonis	6.0	+1.91	− 7.7	+ 9 11.2	**19** 23 47.6	− 6 46.6	−0.3810	0.5322	−0.2661	+24
37 Sextantis	6.3	1.95	9.2	6 55.1	**20** 5 2.2	− 1 42.3	+0.5156	0.5315	0.2703	+75
38 Sextantis	7.8	1.96	9.3	6 53.5	5 36.8	− 1 8.8	+0.3869	0.5314	0.2707	+66
56 Leonis	6.0	2.00	9.7	6 44.2	9 44.6	+ 2 51.0	−0.5803	0.5311	0.2735	+14
c Leonis	5.3	2.02	10.0	6 39.4	11 59.1	+ 5 1.1	−1.1130	0.5310	0.2748	−18
75 Leonis	5.7	+2.05	−12.1	+ 2 34.7	19 50.9	−11 22.4	+0.8290	0.5311	−0.2787	+90
76 Leonis	6.3	2.05	12.2	2 13.0	20 37.6	−10 37.2	+0.9770	0.5311	0.2792	+90
79 Leonis	6.0	2.08	12.5	1 58.5	23 3.3	− 8 16.2	+0.5426	0.5311	0.2799	+77
83 Leonis	6.5	2.10	12.1	3 34.6	23 54.2	7 27.0	−1.3090	0.5311	0.2800	−34
τ Leonis	5.1	2.12	12.2	+ 3 25.5	**21** 0 53.8	− 6 29.4	−1.4340	0.5311	0.2802	−57
B. A. C. 4134	6.3	+2.32	−16.1	− 3 22.9	**22** 0 29.8	− 7 39.6	−1.2300	0.5370	−0.2798	−27
χ Virginis	5.2	2.38	17.9	7 25.7	10 12.2	+ 1 43.3	+0.1179	0.5414	0.2753	+48
28 Virginis	7.0	2.40	17.8	6 56.0	11 26.5	+ 2 55.1	−0.7155	0.5428	0.2746	− 5
ψ Virginis	5.2	2.45	18.5	8 58.8	17 3.1	+ 8 20.3	−0.2045	0.5444	0.2706	+31
g Virginis	5.9	2.51	18.9	10 11.4	23 7.6	− 9 47.7	−0.6262	0.5479	0.2653	+ 9
50 Virginis	6.3	+2.52	−18.8	− 9 46.8	23 57.4	− 8 59.7	−1.2540	0.5484	−0.2645	−33
i Virginis	5.7	2.60	19.5	12 10.3	**23** 7 26.2	− 1 46.6	−0.8200	0.5534	0.2563	− 3
75 Virginis	6.0	2.63	20.0	14 50.0	10 5.7	+ 0 47.3	+1.1530	0.5547	0.2530	+75
83 Virginis	6.0	2.70	20.2	15 39.7	15 6.8	+ 5 37.6	+0.7249	0.5582	0.2462	+74
85 Virginis	6.5	2.70	20.1	15 15.0	15 35.1	+ 6 4.9	+0.1991	0.5588	0.2456	+48
B. A. C. 4722	5.8	+2.85	−20.1	−17 43.2	**24** 4 9.6	− 5 48.2	−0.3037	0.5675	−0.2247	+20
B. A. C. 4923	7.3	3.09	20.0	20 57.0	21 11.7	+10 35.0	−0.6203	0.5797	0.1889	0
42 Libræ	5.7	3.26	17.6	23 29.1	**25** 13 59.7	+ 2 43.0	−0.9082	0.5899	0.1454	−22
B. A. C. 5197	6.0	3.30	17.3	24 23.7	16 6.9	+ 4 45.0	−0.2990	0.5910	0.1398	+11
b Scorpii	5.3	3.34	17.1	25 26.4	18 4.5	+ 6 37.9	+0.4814	0.5919	0.1339	+52
A^2 Scorpii	5.2	+3.34	−16.9	−25 1.3	19 5.4	+ 7 36.2	−0.0736	0.5924	−0.1309	+22
B. A. C. 5253	5.8	3.32	16.9	24 13.7	19 12.7	+ 7 43.2	−0.8845	0.5926	0.1306	−22
B. A. C. 5255	6.0	3.34	16.9	25 6.4	19 19.0	+ 7 49.3	−0.0167	0.5926	0.1304	+25
3 Scorpii	6.7	3.34	16.9	24 56.4	19 29.5	+ 7 59.4	−0.2241	0.5926	0.1297	+14
4 Scorpii	6.3	3.36	16.9	25 57.9	19 47.9	+ 8 17.1	+0.7811	0.5927	0.1287	+64
B. A. C. 5314	5.7	+3.37	−16.4	−25 34.8	22 47.8	+11 9.5	+0.0234	0.5940	−0.1200	+26
B. A. C. 5347	6.0	3.40	16.1	26 3.1	**26** 0 35.8	−11 6.8	+0.2847	0.5947	0.1146	+39
σ Scorpii	3.4	3.41	15.3	25 20.9	5 33.6	− 6 21.3	−0.9550	0.5964	0.0994	−29
α Scorpii	1.2	3.45	14.7	26 12.3	8 38.7	− 3 23.8	−0.3833	0.5973	0.0900	+ 2
τ Scorpii	3.2	3.50	14.3	28 0.2	11 3.1	− 1 5.4	+1.2250	0.5975	0.0823	+62
B. A. C. 5800	7.5	+3.53	−11.3	−26 51.8	**27** 1 28.4	−11 16.2	−0.7838	0.5981	−0.0359	−24
A Ophiuchi	4.9	3.52	11.7	26 27.2	1 55.0	−10 50.7	−1.2150	0.5980	0.0345	−55
38 Ophiuchi	6.7	3.52	11.0	26 31.1	2 45.8	−10 1.9	−1.1800	0.5980	−0.0317	−52
B. A. C. 6127	5.1	3.58	6.6	28 28.2	21 51.0	+ 8 16.1	+0.7939	0.5917	+0.0292	+62
B. A. C. 6194	5.1	3.54	5.9	27 4.7	**28** 1 43.2	+11 58.9	−0.4990	0.5893	0.0413	− 8
φ Sagittarii	3.7	+3.49	− 3.3	−27 6.0	12 31.5	− 1 38.7	+0.1432	0.5824	+0.0733	+28
σ Sagittarii	2.3	3.45	2.6	26 25.5	16 22.2	+ 2 3.0	−0.2543	0.5793	0.0842	+ 9
ψ Sagittarii	5.4	3.37	− 1.0	25 26.1	**29** 0 36.3	+ 9 58.1	−0.5005	0.5724	0.1064	− 2
h^1 Sagittarii	5.7	3.28	+ 0.6	24 56.8	9 8.1	− 5 49.2	−0.0122	0.5646	0.1277	+25
h^2 Sagittarii	4.7	3.28	0.8	25 6.8	9 24.9	− 5 33.1	+0.1974	0.5641	0.1282	+36
4 Capricorni	6.1	+3.07	+ 3.5	−22 7.8	**30** 3 26.7	+12 9.8	−0.2720	0.5479	+0.1670	+16
B. A. C. 7049	6.5	3.03	4.2	22 44.1	8 38.8	− 7 8.4	+1.2670	0.5419	0.1768	+67
20 Capricorni	6.3	2.79	6.0	19 26.2	22 48.2	+ 6 33.0	+0.4233	0.5283	0.1996	+57
θ Capricorni	4.1	2.72	5.9	17 38.7	**31** 1 53.4	+ 9 32.4	−0.8712	0.5257	0.2041	−11
30 Capricorni	5.5	2.68	7.1	18 25.2	7 46.2	− 8 45.8	+1.1820	0.5204	0.2118	+72
31 Capricorni	6.7	+2.67	+ 7.0	−17 53.8	7 55.7	− 8 36.6	+0.6531	0.5201	+0.2120	+71
ι Capricorni	4.4	2.64	7.0	17 16.5	9 55.0	− 6 41.1	+0.4078	0.5184	0.2145	+58
42 Capricorni	5.6	2.47	7.4	14 30.5	19 43.7	+ 2 49.8	−0.4223	0.5102	0.2252	+17
44 Capricorni	6.1	2.46	7.6	14 52.3	20 30.0	+ 3 34.8	+0.1462	0.5099	0.2260	+46
45 Capricorni	6.3	+2.47	+ 7.8	−15 13.4	20 58.9	+ 4 2.8	+0.6350	0.5097	+0.2264	+73

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
apricorni	5.2	+2.40	+8.0	-14 2.3	**1** 1 47.5	+ 8 42.9	+0.4524	0.5059	+0.2309	+64	-20
quarii	6.8	2.26	8.3	11 19.7	10 56.8	- 6 23.7	-0.3469	0.5001	0.2383	+23	-64
quarii	5.6	2.27	8.4	12 4.4	10 59.5	- 6 21.1	+0.4760	0.5001	0.2383	+67	-19
A. C. 7740	7.0	2.26	8.4	11 34.5	11 53.3	- 5 28.7	+0.1454	0.4995	0.2390	+48	-36
quarii	7.0	2.26	8.6	12 26.2	12 29.6	- 4 53.5	+1.2300	0.4992	0.2394	+78	+29
quarii	6.4	+2.01	+8.8	- 7 30.2	**2** 4 48.4	+10 58.1	-0.1756	0.4910	+0.2487	+33	-53
A. C. 7986	5.9	1.92	8.6	5 32.7	11 28.8	- 6 32.4	-0.6670	0.4879	0.2512	+ 9	-88
A. C. 7993	6.6	1.91	9.1	5 21.8	12 39.8	- 5 23.3	-0.5606	0.4877	0.2516	+14	-78
A. C. 8017	6.1	1.88	8.8	5 16.1	15 2.6	- 3 4.3	-0.0660	0.4870	0.2523	+40	-47
A. C. 8094	5.4	1.79	9.3	4 3.5	22 59.6	+ 4 39.9	+0.6137	0.4850	0.2541	+81	-12
iscium	6.4	+1.70	+9.3	- 2 21.6	**3** 6 53.9	-11 38.5	+0.7544	0.4837	+0.2551	+82	- 5
iscium	6.8	1.70	8.9	1 36.3	6 56.0	-11 36.5	-0.0699	0.4834	0.2551	+40	-47
iscium	6.4	1.68	9.1	1 39.4	8 19.9	-10 14.7	+0.3442	0.4833	0.2551	+63	-26
iscium	5.9	1.67	9.2	- 1 49.1	9 34.6	- 9 2.1	+0.8395	0.4833	0.2552	+88	0
iscium	5.8	1.57	9.0	+ 0 30.1	18 20.7	- 0 29.8	+0.5142	0.4826	0.2549	+74	-16
iscium	5.0	+1.54	+8.4	+ 2 21.2	19 46.9	+ 0 54.1	-1.1670	0.4827	+0.2548	-21	-88
iscium	6.4	1.54	8.8	1 30.8	20 25.2	+ 1 31.4	-0.0756	0.4827	0.2548	+39	-48
iscium	5.8	1.31	8.5	6 23.0	**4** 18 48.9	- 0 40.5	+0.1864	0.4859	0.2490	+54	-33
iscium	3.7	1.01	7.7	14 48.7	**6** 3 22.2	+ 6 59.3	-1.3280	0.4996	0.2279	-41	-75
iscium	6.3	1.00	7.9	14 7.9	5 40.2	+ 9 13.3	-0.0552	0.5007	0.2256	+41	-42
iscium	7.5	+0.99	+8.1	+13 45.6	7 31.3	+11 1.2	+0.7702	0.5019	+0.2239	+90	+ 1
rietis	5.7	0.95	7.6	16 26.4	12 12.4	- 8 25.7	-1.1460	0.5047	0.2193	-23	-74
A. C. 549	8.2	0.94	7.6	16 30.2	12 17.8	- 8 20.5	-1.1950	0.5047	0.2191	-27	-73
rietis	5.7	0.91	7.6	17 18.7	16 58.8	- 3 47.7	-1.0690	0.5078	0.2139	-17	-73
A. C. 686	7.2	0.86	7.5	19 7.7	**7** 1 25.5	+ 4 24.0	-1.3020	0.5137	0.2037	-41	-70
rietis	7.5	+0.84	+7.6	+19 12.8	4 6.2	+ 6 59.9	-0.8525	0.5157	+0.2002	- 3	-71
rietis	6.0	0.82	7.8	19 23.7	9 49.6	-11 27.2	+0.0713	0.5200	0.1922	+48	-30
rietis	6.0	0.78	8.0	19 34.2	15 35.4	- 5 52.1	+0.9627	0.5244	0.1834	+90	+19
A. C. 920	7.0	0.75	7.9	21 12.3	23 31.5	+ 1 48.9	+0.5766	0.5306	0.1702	+82	- 2
rietis	4.6	0.75	7.9	20 55.6	23 41.3	+ 1 58.3	+0.9095	0.5307	0.1701	+90	+17
rietis	5.7	+0.70	+7.7	+24 21.4	**8** 11 22.7	-10 43.3	-0.9640	0.5400	+0.1484	-12	-66
auri	6.0	0.68	7.8	24 7.0	16 1.2	- 6 14.2	-0.0326	0.5438	0.1390	+42	-30
auri	6.7	0.69	7.8	24 59.7	18 52.1	- 3 29.1	-0.5999	0.5458	0.1329	+10	-60
auri	6.3	0.69	8.0	23 57.8	20 42.0	- 1 42.9	+0.7584	0.5473	0.1289	+90	+13
auri	4.3	0.69	8.0	23 47.3	20 44.2	- 1 40.8	+0.9535	0.5473	0.1289	+90	+25
auri	6.3	+0.69	+7.9	+24 30.9	20 51.1	- 1 34.2	+0.1806	0.5475	+0.1287	+54	-17
auri	5.0	0.69	8.0	24 8.5	20 52.8	- 1 32.5	+0.5887	0.5475	0.1287	+85	+ 4
auri	5.0	0.69	8.0	24 2.6	21 9.5	- 1 16.3	+0.7313	0.5475	0.1280	+90	+12
auri	7.0	0.69	8.0	24 13.9	21 11.5	- 1 14.4	+0.5308	0.5476	0.1280	+80	+ 1
auri	7.0	0.69	8.0	24 12.3	21 15.3	- 1 10.8	+0.5687	0.5476	0.1278	+83	+ 3
auri	4.7	+0.69	+8.1	+23 37.6	21 23.3	- 1 3.0	+1.2120	0.5478	+0.1276	+90	+46
auri	8.0	0.69	8.1	23 47.7	21 50.7	- 0 36.6	+1.0880	0.5480	0.1266	+90	+35
auri	3.1	0.69	8.1	23 47.1	21 54.3	- 0 33.1	+1.1060	0.5480	0.1263	+90	+37
A. C. 1171	7.8	0.69	8.0	24 1.6	22 21.3	- 0 7.0	+0.9005	0.5484	0.1254	+90	+22
auri	4.0	0.69	8.1	23 44.2	22 39.3	+ 0 10.3	+1.2520	0.5484	0.1247	+90	+52
auri	6.2	+0.69	+8.1	+23 48.2	22 39.9	+ 0 10.9	+1.1800	0.5484	+0.1247	+90	+43
				NEW	*MOON.*						
urigæ	5.7	0.89	6.9	28 6.3	**11** 20 6.8	- 4 56.4	-0.9694	0.5751	-0.0613	-15	-62
eminorum	6.3	0.95	6.3	26 13.1	**12** 5 48.2	+ 4 22.9	+0.2834	0.5736	0.0885	+61	- 8
eminorum	6.3	+0.95	+6.3	+26 3.4	6 4.5	+ 4 38.6	+0.4285	0.5735	-0.0892	+72	0
. vi, 1656	8.2	0.97	6.3	26 59.5	7 50.6	+ 6 20.6	-0.7134	0.5733	0.0942	+ 3	-63
eminorum	6.0	0.99	6.1	27 1.7	10 57.4	+ 9 20.4	-1.0560	0.5722	0.1027	-21	-63
eminorum	7.2	0.99	5.9	25 55.4	11 34.1	+ 9 55.7	+0.0367	0.5719	0.1042	+46	-22
A. C. 2363	7.3	0.98	5.8	24 53.5	12 15.4	+10 35.4	+1.0430	0.5715	0.1061	+90	+34
eminorum	6.3	+0.98	+5.8	+25 4.0	12 21.4	+10 41.2	+0.8500	0.5715	-0.1064	+90	+21

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° ′	d h m	h m				°	°
A Geminorum	5.7	+1.02	+ 5.5	+25 15.1	**12** 15 59.3	− 9 49.1	+0.2527	0.5707	−0.1161	+59	−12
κ Geminorum	3.7	1.08	4.8	24 38.9	**13** 0 44.3	− 1 23.8	−0.2311	0.5671	0.1385	+31	−39
82 Geminorum	6.3	1.08	4.5	23 24.0	2 29.1	+ 0 17.2	+0.8231	0.5663	0.1428	+90	+16
7 Cancri	6.3	1.13	3.8	22 21.8	8 57.8	+ 6 31.6	+0.9251	0.5632	0.1583	+90	+21
μ^1 Cancri	6.3	1.14	3.8	22 56.0	10 0 0	+ 7 31.5	+0.1663	0.5627	0.1607	+53	−21
B. A. C. 2703	7.5	+1.14	+ 3.7	+22 45.5	10 7.4	+ 7 38.7	+0.3291	0.5624	−0.1611	+64	−13
μ^2 Cancri	5.7	1.14	3.5	21 53.1	10 38.3	+ 8 8.4	+1.1530	0.5623	0.1623	+90	+37
B. A. C. 2788	6.0	1.18	2.9	21 4.6	16 2.2	−10 39.5	+1.0810	0.5597	0.1744	+90	+30
η Cancri	5.4	1.22	2.4	20 47.7	21 23.5	− 5 29.7	+0.4072	0.5568	0.1857	+69	−11
35 Cancri	6.3	1.23	2.1	19 56.8	22 32.4	− 4 23.2	+1.0690	0.5562	0.1882	+90	+27
B. A. C. 2907	8.8	+1.25	+ 1.8	+19 57.4	**14** 0 12.7	− 2 46.5	+0.7413	0.5552	−0.1915	+90	+ 6
38 Cancri	7.0	1.25	1.9	20 8.7	0 27.1	− 2 32.5	+0.5017	0.5551	0.1921	+76	− 7
39 Cancri	7.0	1.25	1.9	20 22.5	0 37.3	− 2 22.7	+0.2310	0.5549	0.1923	+57	−21
40 Cancri	7.3	1.25	1.9	20 20.3	0 39.5	− 2 20.6	+0.2620	0.5549	0.1923	+59	−19
B. A. C. 2919	7.3	1.25	1.9	20 2.2	0 44.4	− 2 15.9	+0.5585	0.5549	0.1925	+81	− 4
ε Cancri	7.2	+1.25	+ 1.8	+19 54.7	0 46.5	− 2 13.9	+0.6808	0.5549	−0.1927	+90	+ 2
e Cancri	7.1	1.25	1.8	20 5.3	0 53.7	− 2 7.0	+0.4741	0.5549	0.1929	+74	− 9
B. A. C. 2925	7.7	1.25	1.8	19 56.9	0 59.4	− 2 1.4	+0.6016	0.5547	0.1931	+84	− 2
B. A. C. 2931	7.5	1.26	1.8	20 14.7	1 22.8	− 1 38.9	+0.2171	0.5546	0.1938	+56	−22
JUPITER				18 57.9	4 4 0	+ 0 56.7	+1.0140	0.5455	0.1970	+90	+22
71 Cancri	8.0	+1.33	+ 0.2	+17 48.3	11 59.6	+ 8 35.7	+0.5720	0.5488	−0.2137	+81	− 6
78 Cancri	7.8	1.34	0.1	17 53.4	13 27.7	+10 0.7	+0.1683	0.5481	0.2162	+53	−27
80 Cancri	6.8	1.36	+ 0.1	18 28.2	14 45.5	+11 15.8	−0.7125	0.5473	0.2184	+ 5	−72
83 Cancri	5.7	1.39	− 0.4	18 8.8	17 56.1	− 9 40.2	−1.0780	0.5456	0.2237	−18	−72
7 Leonis	6.3	1.42	2.0	14 50.6	**15** 1 39.5	− 2 12.4	+0.5425	0.5419	0.2354	+78	−10
11 Leonis	6.8	+1.43	− 2.1	+14 49.0	2 38.7	− 1 15.4	+0.3370	0.5413	−0.2368	+63	−21
ψ Leonis	6.0	1.45	2.5	14 29.8	5 15.9	+ 1 16.6	+0.0410	0.5400	0.2403	+46	−36
23 Leonis	6.3	1.47	3.1	13 33.1	8 38.9	+ 4 32.8	+0.1895	0.5383	0.2447	+54	−29
ν Leonis	5.3	1.50	3.6	12 56.3	11 59 7	+ 7 47.0	−0.0086	0.5369	0.2488	+43	−40
α Leonis	1.3	1.55	4.2	12 28.4	16 45.1	+11 37.0	−0.7280	0.5352	0.2542	+ 6	−77
44 Leonis	6.0	+1.59	− 5.9	+ 9 18.7	**16** 0 43.1	− 3 54.8	+0.4458	0.5325	−0.2618	+70	−19
45 Leonis	6.0	1.62	5.7	10 17.4	1 50.7	− 2 49.4	−0.8489	0.5320	0.2628	− 1	−80
ρ Leonis	4.0	1.64	6.1	9 50.4	4 17.9	− 0 26.9	−1.0370	0.5310	0.2649	−13	−80
49 Leonis	6.0	1.64	6.6	9 11.2	5 21.9	+ 0 35.0	−0.6527	0.5310	0.2657	+10	−80
37 Sextantis	6.3	1.68	7.8	6 55.2	10 38.9	+ 5 41.7	+0.2428	0.5295	0.2695	+57	−30
38 Sextantis	7.8	+1.69	− 7.8	+ 6 53.6	11 14.0	+ 6 15.7	+0.1120	0.5295	−0.2699	+50	−37
56 Leonis	6.6	1.74	8.3	6 44.3	15 24.0	+10 17.7	−0.8598	0.5288	0.2724	− 1	−83
d Leonis	5.3	1.73	9.3	4 10.4	17 35.1	−11 35.4	+1.1540	0.5284	0.2735	+90	+21
c Leonis	5.3	1.76	8.5	6 39.5	17 39.9	−11 30.8	−1.3950	0.5284	0.2735	−47	−83
75 Leonis	5.7	1.80	10.5	2 34.7	**17** 1 37.5	− 3 48.3	+0.5619	0.5275	0.2768	+78	−15
76 Leonis	6.3	+1.80	−10.7	+ 2 13.0	2 24.7	− 3 2.7	+0.7109	0.5275	−0.2769	+90	− 7
79 Leonis	6.0	1.83	11.0	+ 1 58.5	4 52.5	− 0 39.6	+0.2724	0.5275	0.2776	+59	−30
χ Virginis	5.2	2.17	16.6	− 7 25.7	**18** 16 42.3	+10 0.8	−0.1246	0.5343	0.2708	+36	−50
28 Virginis	7.0	2.19	16.5	6 56.0	17 58.3	+11 14.4	−0.9663	0.5351	0.2701	− 9	−90
ψ Virginis	5.2	2.25	17.4	8 58.8	23 43.5	− 7 11.8	−0.4409	0.5375	0.2659	+19	−70
g Virginis	5.9	+2.33	−17.9	−10 11.4	**19** 5 56.7	− 1 11.0	−0.8561	0.5404	−0.2603	− 4	−90
i Virginis	5.7	2.44	18.8	12 10.3	14 28.4	+ 7 3.3	−1.0390	0.5456	0.2512	−17	−90
75 Virginis	6.0	2.48	19.5	14 50.0	17 12.2	+ 9 41.4	+0.9651	0.5471	0.2478	+75	+ 9
83 Virginis	6.0	2.57	19.9	15 39.7	22 21.3	− 9 20.2	+0.5414	0.5503	0.2409	+68	−15
85 Virginis	6.5	2.58	19.8	15 15.0	22 50.4	− 8 52.1	+0 0067	0.5505	0.2403	+38	−43
B. A. C. 4722	5.8	+2.78	−20.1	−17 43.2	**20** 11 45.3	+ 3 35.1	−0.4742	0.5595	−0.2197	+11	−73
B. A. C. 4923	7.3	3.11	20.7	20 57.0	**21** 5 14.3	− 3 34.6	−0.7561	0.5720	0.1842	− 8	−90
42 Libræ	5.7	3.38	18.5	23 29.1	22 26.5	−11 2.3	−1.0070	0.5828	0.1414	−29	−90
B. A. C. 5197	6.0	3.42	18.2	24 23.7	**22** 0 36.6	− 8 57.4	−0.3868	0.5841	0.1356	+ 7	−68
b Scorpii	5.3	3.47	18.1	25 26.4	2 36.7	− 7 2.1	+0.4071	0.5852	0.1301	+47	−21
A^2 Scorpii	5.2	+3.48	−17.9	−25 1.3	3 38.9	− 6 2.4	−0.1501	0.5861	−0.1273	+18	−52

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
		s	"	° ′	d h m	h m				°	°
A. C. 5253	5.8	+3.46	−17.8	−24 13.7	**22** 3 46.4	− 5 55.2	−0.9703	0.5861	−0.1270	−28	−90
A. C. 5255	6.0	3.48	17.9	25 6.4	3 52.8	− 5 49.1	−0.0930	0.5861	0.1266	+ 2	−49
orpii	6.7	3.48	17.8	24 56.4	4 3.5	− 5 38.7	−0.2856	0.5862	0.1261	+11	−61
orpii	6.3	3.50	17.9	25 57.9	4 22.3	− 5 20.7	+0.7150	0.5863	0.1251	+64	− 3
A. C. 5314	5.7	3.54	17.4	25 34.8	7 25.9	− 2 24.5	−0.0440	0.5879	0.1163	+22	−46
A. C. 5347	6.0	+3.57	−17.1	−26 3.1	9 16.2	− 0 38.6	+0.2251	0.5888	−0.1112	+36	−31
orpii	3.4	3.63	16.3	25 20.9	14 19.8	+ 4 12.8	−1.0150	0.5909	0.0962	−34	−90
orpii	1.2	3.68	15.7	26 12.4	17 28.3	+ 7 13.7	−0.4290	0.5919	0.0870	0	−72
orpii	3.2	3.75	15.4	28 0.3	19 55.1	+ 9 34.5	+1.1960	0.5926	0.0792	+62	+37
A. C. 5800	7.5	3.90	12.3	26 51.8	**23** 10 33.6	− 0 23.1	−0.7943	0.5946	0.0334	−25	−90
hiuchi	4.9	+3.87	−12.6	−26 27.2	11 0.9	+ 0 3.1	−1.2290	0.5946	−0.0321	−57	−90
hiuchi	6.7	3.90	11.9	26 31.1	11 52.0	+ 0 52.1	−1.1890	0.5944	0.0293	−53	−90
hiuchi	5.8	3.96	11.4	28 2.7	14 0.6	+ 2 55.5	+0.3192	0.5943	−0.0225	+33	−25
gittarii	4–6	4.02	9.1	27 47.7	23 15.4	+11 47.6	−0.0086	0.5928	+0.0069	+14	−44
A. C. 6127	5.1	4.09	7.1	28 28.2	**24** 7 8.4	− 4 38.5	+0.8383	0.5900	0.0314	+62	+ 6
A. C. 6194	5.1	+4.06	− 6.1	−27 4.9	11 2.0	− 0 54.3	−0.4490	0.5883	+0.0434	− 5	−73
gittarii	3.7	4.08	3.2	27 6.0	21 52.8	+ 9 30.6	+0.2178	0.5826	0.0755	+32	−31
gittarii	2.3	4.07	2.3	26 25.6	**25** 1 43.9	−10 47.3	−0.1715	0.5798	0.0864	+13	−54
gittarii	5.4	4.03	− 0.2	25 26.1	9 58.0	− 2 52.3	−0.4017	0.5737	0.1086	+ 3	−69
gittarii	5-7	3.99	+ 1.8	25 56.8	18 28.7	+ 5 19.3	+0.1065	0.5665	0.1300	+31	−38
gittarii	4.7	+3.98	+ 1.8	−25 6.8	18 45.4	+ 5 35.4	+0.3178	0.5663	+0.1308	+43	−26
pricorni	6.1	3.81	5.5	22 7.8	**26** 12 41.3	− 1 7.2	−0.1145	0.5498	0.1698	−24	−50
pricorni	6.3	3.60	9.2	19 26.1	**27** 7 52.6	− 6 34.6	+0.6155	0.5322	0.2026	+68	−10
pricorni	4.1	3.53	9.3	17 38.6	10 55.9	− 3 37.2	−0.6733	0.5295	0.2070	+ 1	−90
pricorni	6.7	3.50	10.8	17 53.7	16 54.2	+ 2 9.8	+0.8559	0.5243	0.2149	+72	+ 3
pricorni	4.4	+3.46	+10.8	−17 16.4	18 52.2	+ 4 4.0	+0.6152	0.5226	+0.2175	+70	−11
pricorni	5.6	3.30	11.6	14 30.5	**28** 4 34.2	−10 31.7	−0.1940	0.5145	0.2282	+28	−54
pricorni	6.1	3.30	11.9	14 52.3	5 20.1	− 9 47.2	+0.3719	0.5140	0.2290	+58	−24
pricorni	6.3	3.31	12.1	15 13.4	5 48.6	− 9 19.5	+0.8610	0.5135	0.2294	+75	+ 3
pricorni	5.2	3.24	12.4	14 2.3	10 33.8	− 4 42.9	+0.6844	0.5101	0.2337	+76	− 7
pricorni	6.8	+3.12	+13.0	−11 19.7	19 36.7	+ 4 4.1	−0.0995	0.5041	+0.2411	+35	−49
pricorni	5.6	3.13	13.2	12 4.4	19 39.3	+ 4 6.6	+0.7196	0.5041	0.2411	+78	− 6
A. C. 7740	7.0	3.11	13.2	11 34.5	20 32.5	+ 4 58.4	+0.3925	0.5032	0.2417	+62	−23
uarii	6.4	2.89	14.0	7 30.2	**29** 13 16.4	− 2 46.1	+0.0892	0.4942	0.2508	+47	−39
A. C. 7986	5.9	2.80	14.1	5 32.3	19 52.6	+ 3 39.2	−0.3941	0.4912	0.2531	+23	−66
A. C. 7993	6.6	+2.79	+14.1	− 5 21.8	21 3.0	+ 4 47.7	−0.2901	0.4909	+0.2535	+28	−60
A. C. 8017	6.1	2.77	14.3	5 16.1	23 24.4	+ 7 5.2	+0.2046	0.4898	0.2542	+54	−33
A. C. 8094	5.4	2.68	14.7	4 3.5	**30** 7 17.1	− 9 14.9	+0.8878	0.4874	0.2557	+86	+ 3
scium	6.4	2.59	14.8	2 21.6	15 7.6	− 1 37.0	+1.0300	0.4856	0.2562	+88	+12
scium	6.8	2.58	14.6	1 36.3	15 9.7	− 1 35.0	+0.2090	0.4856	0.2562	+55	−33
scium	6.4	+2.57	+14.7	− 1 39.4	16 33.0	− 0 13.9	+0.6201	0.4854	+0.2563	+83	−12
scium	5.9	2.56	14.9	− 1 49.1	17 47.1	+ 0 58.2	+1.1160	0.4853	0.2564	+88	+18
scium	4.5	+2.47	+14.1	+ 1 12.6	22 18.5	+ 5 22.5	−1.0640	0.4846	+0.2561	−14	−89
					JULY.						
scium	5.8	+2.44	+14.6	+ 0 30.1	**1** 2 29.9	+ 9 27.2	+0.7903	0.4843	+0.2557	+90	− 3
scium	5.0	2.41	14.1	2 21.3	3 55.5	+10 50.5	−0.8882	0.4842	0.2555	− 3	−88
scium	6.4	2.41	14.4	1 30.9	4 33.5	+11 27.4	+0.2004	0.4842	0.2555	+55	−33
scium	6.9	2.21	13.6	7 7.2	23 5.3	+ 5 29.8	−1.3010	0.4853	0.2502	−34	−83
scium	5.8	+2.19	+14.1	+ 6 23.1	**2** 2 52.4	+ 9 10.8	+0.4533	0.4857	+0.2484	+70	−19
scium	3.7	1.92	12.3	14 48.8	**3** 11 26.4	− 7 8.7	−1.0910	0.4978	0.2262	−18	−75
scium	6.3	1.86	12.5	14 8.0	13 44.8	− 4 54.2	+0.1803	0.4991	0.2241	+54	−29
scium	7.5	1.85	12.7	13 45.7	15 36.2	− 3 6.0	+1.0040	0.5002	0.2222	+90	+16
scium	6.3	1.84	12.0	15 52.9	15 48.4	− 2 54.2	−1.2910	0.5005	0.2220	−36	−74
ietis	5.7	+1.81	+11.9	+16 26.5	20 18.0	+ 1 27.7	−0.9185	0.5030	+0.2173	− 6	−74

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
B. A. C. 549	8.2	+1.81	+11.9	+16 30.3	**3** 20 23.4	+ 1 32.9	−0.9701	0.5030	+0.2171	−10	−73
ι Arietis	5.7	1.78	11.7	17 18.8	**4** 1 5.4	+ 6 6.7	−0.8517	0.5059	0.2119	− 2	−73
15 Arietis	5.7	1.72	11.3	19 0.8	7 54.7	−11 16.1	−1.3030	0.5106	0.2038	−41	−71
B. A. C. 686	7.2	1.70	11.3	19 7.8	9 33.8	− 9 39.9	−1.0930	0.5117	0.2017	−20	−71
θ Arietis	5.7	1.69	11.2	19 25.4	11 43.6	− 7 34.0	−0.9831	0.5133	0.1988	−12	−71
23 Arietis	7.5	+1.68	+11.3	+19 12.9	12 14.7	− 7 3.9	−0.6516	0.5135	+0.1981	+ 9	−70
26 Arietis	6.0	1.64	11.2	19 23.8	17 59.9	− 1 29.1	+0.2669	0.5178	0.1900	+59	−20
μ Arietis	6.0	1.62	11.3	19 34.3	23 47.0	+ 4 7.2	+1.1480	0.5220	0.1812	+90	+33
B. A. C. 920	7.0	1.55	11.0	21 12.4	**5** 7 44.8	+11 50.0	+0.7498	0.5284	0.1682	+90	+ 7
ε Arietis	4.6	1.55	11.1	20 55.7	7 54.7	+11 59.5	+1.0810	0.5285	0.1678	+90	+29
64 Arietis	5.7	+1.50	+ 9.8	+24 21.5	19 38.3	− 0 39.9	−0.8117	0.5380	+0.1462	− 2	−66
7 Tauri	6.0	1.46	9.8	24 7.1	**6** 0 17.4	+ 3 49.8	+0.1067	0.5416	0.1369	+50	−22
11 Tauri	6.7	1.44	9.6	24 59.8	3 8.7	+ 6 35.3	−0.4624	0.5438	0.1309	+18	−52
g Pleiadum	6.3	1.44	9.7	23 57.9	4 58.8	+ 8 21.7	+0.8917	0.5454	0.1269	+90	+22
17 Tauri	4.3	1.44	9.7	23 47.4	5 0.9	+ 8 23.7	+1.0860	0.5454	0.1269	+90	+35
18 Tauri	6.3	+1.44	+ 9.5	+24 31.0	5 7.9	+ 8 30.4	+0.3141	0.5457	+0.1267	+63	−10
19 Tauri	5.0	1.44	9.7	24 8.6	5 9.5	+ 8 32.0	+0.7219	0.5457	0.1266	+90	+11
20 Tauri	5.0	1.44	9.7	24 2.7	5 26.2	+ 8 48.2	+0.8626	0.5458	0.1260	+90	+20
21 Tauri	7.0	1.43	9.7	24 14.0	5 28.3	+ 8 50.2	+0.6640	0.5458	0.1260	+90	+ 8
22 Tauri	7.0	1.43	9.7	24 12.4	5 32.1	+ 8 53.8	+0.7001	0.5458	0.1258	+90	+10
24 Tauri	8.0	+1.42	+ 9.5	+23 47.8	6 7.6	+ 9 28.1	+1.2180	0.5463	+0.1245	+90	+47
η Tauri	3.1	1.42	9.5	23 47.2	6 11.2	+ 9 31.6	+1.2360	0.5466	0.1243	+90	+50
B. A. C. 1171	7.8	1.42	9.8	24 1.7	6 38.2	+ 9 57.7	+1.0300	0.5467	0.1234	+90	+31
28 Tauri	6.2	1.42	9.7	23 49.3	6 56.9	+10 15.7	+1.2910	0.5469	0.1227	+90	+58
B. A. C. 1192	6.0	1.42	9.4	25 16.1	7 25.3	+10 43.1	−0.2163	0.5471	0.1217	+32	−37
p Tauri	6.0	+1.38	+ 8.9	+26 12.8	16 27.6	− 4 33.5	−0.2281	0.5543	+0.1009	+31	−35
φ Tauri	5.3	1.37	8.6	27 6.3	20 34.3	− 0 35.6	−0.7923	0.5572	0.0910	− 2	−63
χ Tauri	5.7	1.36	9.0	25 23.1	21 33.8	+ 0 21.7	+1.1470	0.5578	0.0885	+90	+44
W. iv, 1421	6.0	1.30	7.8	27 54.1	**7** 17 22.3	− 4 33.4	−0.3017	0.5701	0.0366	+26	−34
22 Aurigæ	7.0	1.29	7.4	28 50.6	22 58.4	+ 0 50.0	−1.1410	0.5723	0.0209	−30	−61
β Tauri	1.8	+1.28	+ 7.4	+28 31.3	**8** 0 10.3	+ 1 59.2	−0 7764	0.5728	+0.0175	− 2	−61
136 Tauri	5.3	1.25	7.0	27 35.3	11 11.6	−11 24.8	+0.2304	0.5765	−0 0142	+58	− 3
				NEW	*MOON.*						
68 Cancri	7.5	1.31	0.3	17 29.3	**11** 17 5.8	− 8 26.9	+1.1580	0.5560	0.2145	+90	+31
71 Cancri	8.0	+1.32	+ 0.1	+17 48.3	18 51.1	− 6 45.3	+0.4525	0.5552	−0.2178	+72	−12
B. A. C. 3103	7.5	1.32	+ 0.1	17 31.9	19 4.4	− 6 32.5	+0.6839	0.5551	0.2181	+90	0
JUPITER				17 28.0	20 47.9	− 4 52.7	+0.3724	0.5455	0.2182	+66	−17
80 Cancri	6.8	1.34	0.0	18 28.2	21 33.5	− 4 8.7	−0.8194	0.5538	0.2225	− 1	−72
83 Cancri	5.7	1.36	− 0.4	18 8.8	**12** 0 40.3	− 1 8.4	−1.1910	0.5520	0.2278	−27	−72
7 Leonis	6.3	+1.35	− 1.6	+14 50.6	8 14.3	+ 6 9.9	+0.4052	0.5480	−0.2395	+68	−17
11 Leonis	6.8	1.36	2.0	14 49.0	9 12.3	+ 7 5.8	+0.1983	0.5475	0.2408	+55	−28
ψ Leonis	6.0	1.37	2.1	14 29.8	11 46.3	+ 9 34.5	−0.0982	0.5464	0.2444	+38	−44
21 Leonis	6.8	1.36	2.8	12 19.7	15 0.4	−11 17.9	+1.3070	0.5445	0.2486	+90	+41
23 Leonis	6.3	1.38	2.5	13 33.1	15 5.3	−11 13.2	+0.0440	0.5445	0.2488	+46	−37
ν Leonis	5.3	+1.40	− 3.0	+12 56.4	18 22.1	− 8 3.1	−0.1590	0.5430	−0.2530	+35	−48
A Leonis	4.7	1.40	3.8	10 30.2	22 49.8	− 3 44.5	+1.1730	0.5411	0.2578	+90	+26
α Leonis	1.3	1.42	3.6	12 28.4	23 2.1	− 3 32.5	−0.8770	0.5411	0.2582	− 3	−78
44 Leonis	6.0	1.45	5.0	9 18.7	**13** 6 51.3	+ 4 0.9	+0.2769	0.5379	0.2657	+59	−27
45 Leonis	6.0	1.47	4.9	10 17.4	7 57.8	+ 5 5.2	−1.0070	0.5373	0.2666	−11	−80
ρ Leonis	4.0	+1.48	− 5.2	+ 9 50.4	10 22.4	+ 7 25.1	−1.1980	0.5365	−0.2685	−25	−80
48 Leonis	5.5	1.46	5.8	7 29.2	11 19.4	+ 8 20.2	+0.9292	0.5363	0.2694	+90	+ 7
49 Leonis	6.0	1.48	5.4	9 11.2	11 25.2	+ 8 25.8	−0.8162	0.5360	0.2694	+ 1	−80
37 Sextantis	6.3	1.50	6.6	6 55.2	16 37.0	−10 32.7	+0.0674	0.5346	0.2729	+47	−39
38 Sextantis	7.8	1.51	6.6	6 53.6	17 11.5	− 9 59.3	−0.0624	0.5343	0.2733	+40	−46
56 Leonis	6.6	+1.54	− 7.1	+ 6 44.3	21 17.7	− 6 1.1	−1.0340	0.5332	−0.2755	−12	−83

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Δδ	Apparent Declination	Washington Mean Time	Hour Angle H	Y	x'	y'	N	S
		s	″	° ′	d h m	h m				°	°
d Leonis	5.3	+1.52	- 8.0	+ 4 10.4	**13** 23 26.9	- 3 56.1	+0.9566	0.5330	-0.2765	+90	+ 8
75 Leonis	5.7	1.59	9.1	2 34.8	**14** 7 22.6	+ 3 44.1	+0.3703	0.5315	0.2795	+65	24
76 Leonis	6.3	1.60	9.2	2 13.1	8 9.3	+ 4 29.2	+0.5184	0.5314	0.2798	+75	17
79 Leonis	6.0	1.62	9.5	+ 1 58.5	10 35.3	+ 6 50.5	+0.0824	0.5310	0.2800	+48	-39
υ Leonis	4.4	1.66	10.8	- 0 15.1	16 43.8	-11 12.9	+0.6074	0.5308	0.2806	-13	82
χ Virginis	5.2	+1.92	15.2	- 7 25.6	**15** 22 11.8	- 6 42.3	-0.3249	0.5344	0.2707	+26	-62
28 Virginis	7.0	1.94	15.2	6 56.0	23 27.8	- 5 28.7	1.1650	0.5348	0.2698	23	-90
ψ Virginis	5.2	2.00	16.1	8 58.8	**16** 5 13.3	+ 0 5.4	0.6366	0.5367	0.2652	+ 9	85
ς Virginis	5.9	2.08	16.6	10 11.4	11 27.8	+ 6 7.4	1.0520	0.5392	0.2592	- 17	-90
i Virginis	5.7	2.19	17.5	12 10.3	20 2.3	- 9 35.5	1.2310	0.5437	0.2495	32	-90
75 Virginis	6.0	+2.23	-18.4	-14 50.0	22 47.3	- 6 56.2	+0.7811	0.5443	+0.2460	+70	- 2
83 Virginis	6.0	2.32	18.8	15 39.7	**17** 3 59.2	- 1 54.9	+0.3614	0.5470	0.2390	+57	-25
85 Virginis	6.5	2.32	18.7	15 15.0	4 28.6	1 26.6	0.1740	0.5474	0.2381	+29	-53
B. A. C. 4722	5.8	2.54	19.2	17 43.2	17 32.7	+11 10.0	0.6482	0.5550	0.2169	+ 2	89
B. A. C. 4923	7.3	2.92	20.4	20 57.0	**18** 11 18.3	+ 4 16.8	0.9149	0.5659	0.1813	- 18	-90
42 Libræ	5.7	+3.23	-18.4	-23 29.1	**19** 4 50.5	- 2 50.8	-1.1480	0.5762	+0.1386	40	90
B. A. C. 5197	6.0	3.29	18.5	24 23.7	7 3.0	- 0 43.4	0.5184	0.5776	0.1328	0	78
b Scorpii	5.3	3.34	18.5	25 26.4	9 5.9	+ 1 14.7	+0.2849	0.5784	0.1273	+40	28
A² Scorpii	5.2	3.35	18.2	25 1.3	10 9.5	+ 2 15.8	0.2764	0.5786	0.1244	+11	61
B. A. C. 5253	5.8	3.34	18.0	24 13.7	10 17.1	+ 2 23.1	1.1040	0.5786	0.1240	-37	90
B. A. C. 5255	6.0	+3.35	-18.2	-25 6.4	10 23.7	+ 2 29.4	0.2184	0.5786	0.1237	-14	57
3 Scorpii	6.7	3.36	18.2	24 56.4	10 34.7	+ 2 40.0	0.4112	0.5789	0.1232	+ 4	70
4 Scorpii	6.3	3.38	18.4	25 57.9	10 53.8	+ 2 58.4	+0.5001	0.5792	0.1224	+58	10
B. A. C. 5314	5.7	3.43	17.8	25 34.8	14 1.4	+ 5 58.6	0.1657	0.5805	0.1138	+16	54
B. A. C. 5347	6.0	3.48	17.7	26 3.1	15 54.0	+ 7 46.8	+0.1111	0.5815	0.1085	+29	- 37
σ Scorpii	3.4	+3.55	-16.7	-25 20.9	21 4.1	11 15.3	-1.1350	0.5833	0.0938	42	90
α Scorpii	1.2	3.62	16.3	26 12.4	**20** 0 16.8	- 8 10.3	-0.5379	0.5845	0.0843	6	81
τ Scorpii	3.2	3.71	16.3	28 0.3	2 47.0	- 5 46.0	+1.1000	0.5852	0.0769	+62	+27
B. A. C. 5800	7.5	3.94	12.8	26 51.8	17 44.6	+ 8 35.6	0.8814	0.5875	0.0377	- 29	90
43 Ophiuchi	5.8	4.02	12.3	28 2.7	21 16.0	+11 58.6	+0.2464	0.5873	-0.0207	+29	30
3 Sagittarii	4.6	+4.16	- 9.9	-27 47.7	**21** 6 42.1	2 58.0	-0.0725	0.5861	+0.0083	+11	48
B. A. C. 6127	5.1	4.26	8.0	28 28.2	14 44.4	+ 4 45.0	+0.7956	0.5841	0.0326	+62	+ 3
B. A. C. 6194	5.1	4.26	6.7	27 4.9	18 42.4	+ 8 33.8	0.4963	0.5826	0.0444	+ 8	-78
φ Sagittarii	3.7	4.32	3.8	27 6.0	**22** 5 44.5	- 4 50.0	+0.1000	0.5775	0.0763	+31	-33
σ Sagittarii	2.3	4.32	2.6	26 25.5	9 39.3	- 1 4.1	0.1954	0.5748	0.0872	+12	-56
ψ Sagittarii	5.4	+4.33	- 0.3	-25 26.1	18 0.6	+ 6 58.2	0.4131	0.5669	+0.1094	+ 3	-70
χ¹ Sagittarii	5.4	4.32	+ 0.8	24 42.6	22 5.1	+10 53.6	0.7099	0.5666	0.1198	-12	-90
χ² Sagittarii	6.3	4.32	0.8	24 37.0	22 8.0	+10 56.3	0.8028	0.5667	0.1199	-17	-90
h¹ Sagittarii	5–7	4.35	2.0	24 56.8	**23** 2 37.7	8 43.9	+0.1106	0.5633	0.1308	+32	37
h² Sagittarii	4.7	4.36	2.0	25 6.8	2 54.6	- 8 27.0	+0.3215	0.5632	0.1315	+43	-26
53 Sagittarii	6.7	+4.32	+ 2.5	-23 30.9	4 16.2	- 7 9.0	1.0240	0.5624	+0.1348	30	90
B. A. C. 6727	6.2	4.31	2.4	23 40.0	4 23.7	- 7 1.8	1.0058	0.5622	0.1350	28	-90
4 Capricorni	6.1	4.30	6.7	22 7.8	21 0.7	+ 9 0.0	0.0849	0.5487	0.1700	+26	-48
20 Capricorni	6.3	4.16	11.1	19 26.1	**24** 16 17.7	+ 3 38.4	+0.6739	0.5322	0.2040	+70	- 7
θ Capricorni	4.1	4.10	11.6	17 38.6	19 21.4	+ 6 30.2	0.6122	0.5294	0.2084	+ 4	-85
31 Capricorni	6.7	+4.10	+12.5	-17 53.7	**25** 1 20.3	11 36.3	+0.0287	0.5248	+0.2165	+72	+ 8
ι Capricorni	4.4	4.07	13.1	17 16.4	3 18.3	9 42.1	+0.0800	0.5242	0.2191	+72	7
42 Capricorni	5.6	3.94	14.5	14 30.5	13 0.0	0 18.2	0.1078	0.5154	0.2290	+33	49
44 Capricorni	6.1	3.94	14.8	14 52.3	13 45.8	+ 0 26.3	+0.4582	0.5153	0.2308	+64	20
45 Capricorni	6.3	3.95	15.0	15 13.4	14 14.3	+ 0 53.9	+0.9497	0.5148	0.2313	+75	+ 8
μ Capricorni	5.2	+3.90	+15.6	14 2.2	18 59.0	+ 5 30.1	+0.7784	0.5110	+0.2357	+71	- 2
c¹ Aquarii	6.8	3.70	16.7	11 19.6	**26** 4 0.3	- 9 44.4	+0.0054	0.5058	0.2436	+41	-43
c² Aquarii	5.6	3.80	16.8	12 4.3	4 2.9	- 9 41.9	+0.8243	0.5058	0.2430	+78	0
B. A. C. 7740	7.0	3.79	16.8	11 34.4	4 50.0	8 50.3	+0.4974	0.5053	0.2438	+60	18
B. A. C. 7774	6.7	3.73	16.9	9 33.2	8 23.0	5 27.4	1.0150	0.5030	0.2454	19	-90
67 Aquarii	6.4	+3.61	+18.3	- 7 30.1	21 35.3	+ 7 20.6	+0.2127	0.4963	+0.2528	+54	-33

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
JULY.											
B. A. C. 7986	5.9	+3.53	+18.7	− 5 32.2	**27** 4 9.5	−10 16.1	−0.2661	0.4934	+0.2552	+29	−58
B. A. C. 7993	6.6	3.52	19.0	5 21.7	5 19.5	− 9 8.0	−0.1586	0.4930	0.2555	+35	−52
B. A. C. 8017	6.1	3.50	19.0	5 16.0	7 40.1	− 6 51.2	+0.3330	0.4920	0.2562	+62	−26
B. A. C. 8094	5.4	3.43	19.6	4 3.4	15 30.2	+ 0 46.0	+1.0240	0.4898	0.2575	+86	+11
11 Piscium	6.4	3.35	19.9	2 21.5	23 18.2	+ 8 21.4	+1.1730	0.4877	0.2580	+88	+22
12 Piscium	6.8	+3.35	+19.7	− 1 36.2	23 20.3	+ 8 23.4	+0.3519	0.4877	+0.2580	+63	−26
13 Piscium	6.4	3.34	19.8	1 39.3	**28** 0 43.2	+ 9 44.1	+0.7661	0.4874	0.2579	+80	− 4
14 Piscium	5.9	3.33	20.0	− 1 49.0	1 56.9	+10 55.8	+1.2600	0.4874	0.2579	+88	+29
15 Piscium	6.6	3.29	19.3	+ 0 44.6	2 42.8	+11 40.4	−1.3590	0.4871	0.2578	−40	−89
21 Piscium	5.8	3.24	20.0	0 30.2	10 37.1	− 4 37.9	+0.9426	0.4863	0.2574	+90	+ 6
22 Piscium	5.0	+3.21	+19.6	+ 2 21.4	12 2.3	− 3 14.9	−0.7369	0.4860	+0.2569	+ 6	−84
25 Piscium	6.4	3.21	19.8	1 31.0	12 40.2	− 2 38.1	+0.3510	0.4860	0.2566	+63	−26
51 Piscium	5.8	3.02	19.7	6 23.2	**29** 10 54.8	− 4 59.0	+0.6139	0.4870	0.2491	+83	−11
η Piscium	3.7	2.78	17.6	14 48.9	**30** 19 30.4	+ 2 43.0	−0.9367	0.4972	0.2255	− 7	−75
101 Piscium	6.3	2.78	17.7	14 8.1	21 49.2	+ 4 57.9	+0.3355	0.4980	0.2232	+63	−21
104 Piscium	7.5	+2.78	+17.8	+13 45.8	23 41.0	+ 6 46.5	+1.1630	0.4990	+0.2214	+90	+28
105 Piscium	6.3	2.78	17.1	15 53.0	23 53.4	+ 6 58.5	−1.1390	0.4991	0.2212	−22	−74
4 Arietis	5.7	2.75	17.0	16 26.6	**31** 4 24.2	+11 21.7	−0.7700	0.5014	0.2165	+ 2	−70
B. A. C. 549	8.2	2.75	17.0	16 30.4	4 29.6	+11 26.9	−0.8198	0.5014	0.2163	− 1	−73
ι Arietis	5.7	2.72	16.6	17 18.9	9 13.2	− 7 57.7	−0.7033	0.5042	0.2110	+ 6	−73
B. A. C. 686	7.2	+2.66	+15.9	+19 7.9	17 45.1	+ 0 19.2	−0.9501	0.5048	+0.2004	− 9	−71
θ Arietis	5.7	2.64	15.8	19 25.5	19 55.7	+ 2 26.0	−0.8414	0.5104	0.1975	− 2	−71
23 Arietis	7.5	+2.64	+15.8	+19 13.0	20 27.1	+ 2 56.4	−0.5089	0.5110	+0.1967	+17	−62
AUGUST.											
26 Arietis	6.0	+2.60	+15.6	+19 23.9	**1** 2 15.1	+ 8 33.9	+0.4092	0.5148	+0.1886	+69	−13
ν Arietis	5.7	2.55	14.7	21 31.0	6 18.4	−11 30.3	−1.1690	0.5175	0.1824	−28	−68
μ Arietis	6.0	2.53	15.4	19 34.4	8 5.3	+ 9 46.7	+1.2900	0.5188	0.1797	+90	+48
B. A. C. 920	7.0	2.47	14.5	21 12.4	16 7.8	− 1 59.3	+0.8863	0.5249	0.1665	+90	+17
ε Arietis	4.6	+2.47	+14.6	+20 55.7	16 17.8	− 1 49.6	+1.2190	0.5250	+0.1662	+90	+41
64 Arietis	5.7	2.41	12.9	24 21.5	**2** 4 9.0	+ 9 38.7	−0.6898	0.5333	0.1445	+ 5	−65
7 Tauri	6.0	2.37	12.8	24 7.1	8 51.4	− 9 48.2	+0.2308	0.5374	0.1352	+57	−15
11 Tauri	6.7	2.36	12.3	24 59.8	11 44.7	− 7 0.8	−0.3447	0.5398	0.1292	+25	−45
g Pleiadum	6.3	2.33	12.5	23 57.9	13 36.1	− 5 13.1	+1.0140	0.5409	0.1258	+90	+29
17 Tauri	4.3	+2.33	+12.6	+23 47.4	13 38.2	− 5 11.1	+1.2070	0.5409	+0.1258	+90	+46
19 Tauri	5.0	2.33	12.5	24 8.6	13 46.9	− 5 2.6	+0.8412	0.5411	0.1247	+90	+18
20 Tauri	5.0	2.33	12.5	24 2.7	14 3.8	− 4 46.3	+0.9845	0.5414	0.1244	+90	+28
21 Tauri	7.0	2.33	12.4	24 14.0	14 5.9	− 4 44.3	+0.7830	0.5414	0.1242	+90	+15
22 Tauri	7.0	2.33	12.4	24 12.4	14 9.8	− 4 40.6	+0.8212	0.5414	0.1242	+90	+17
B. A. C. 1171	7.8	+2.32	+12.3	+24 1.7	15 16.6	− 3 36.0	+1.1500	0.5420	+0.1217	+90	+41
B. A. C. 1192	6.0	2.32	11.9	25 16.1	16 4.3	− 2 50.0	−0.1014	0.5429	0.1200	+38	−31
p Tauri	6.0	2.27	11.3	26 12.8	**3** 1 12.9	+ 5 59.7	−0.1227	0.5495	0.0993	+37	−30
φ Tauri	5.3	2.25	10.4	27 6.3	5 22.5	+10 0.5	−0.6913	0.5527	0.0897	+ 4	−62
χ Tauri	5.7	2.22	10.9	25 23.2	6 22.7	+10 58.5	+1.2540	0.5534	0.0871	+90	+56
W. iv, 1421	6.0	+2.11	+ 8.6	+27 54.1	**4** 2 24.2	+ 6 16.4	−0.2172	0.5656	+0.0354	+31	−29
22 Aurigæ	7.0	2.09	7.8	28 50.6	8 3.6	+11 43.1	−1.0650	0.5685	0.0199	−24	−61
β Tauri	1.8	2.07	7.7	28 31.3	9 16.1	−11 7.1	−0.6987	0.5690	+0.0164	+ 3	−59
136 Tauri	5.3	1.99	7.0	27 35.3	20 22.6	− 0 25.8	+0.2995	0.5731	−0.0153	+62	0
49 Aurigæ	5.7	1.89	5.2	28 6.3	**5** 13 20.2	− 8 7.2	−0.9143	0.5765	0.0642	−11	−62
25 Geminorum	6.5	+1.88	+ 4.8	+28 17.6	15 49.0	− 5 44.2	−1.2770	0.5765	−0.0714	−55	−62
39 Geminorum	6.3	1.81	4.5	26 13.1	22 54.8	+ 1 5.2	+0.3087	0.5763	0.0918	+63	− 6
40 Geminorum	6.3	1.81	4.5	26 3.4	23 11.0	+ 1 20.8	+0.4527	0.5762	0.0926	+74	+ 1
W. vi, 1656	8.2	1.81	4.1	26 59.5	**6** 0 55.5	+ 3 1.3	−0.6842	0.5762	0.0975	+ 5	−62
47 Geminorum	6.0	1.80	3.7	27 1.7	3 59.5	+ 5 58.2	−1.0350	0.5758	0.1062	−19	−63
49 Geminorum	7.2	+1.78	+ 3.8	+25 55.4	4 35.8	+ 6 33.1	+0.0484	0.5758	−0.1076	+46	−21

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
B. A. C. 2363	7.3	+1.77	+ 4.0	+24 53.5	**6** 5 16.2	+ 7 11.9	+1.0610	0.5755	−0.1097	+90	+35
52 Geminorum	6.3	1.76	3.9	25 4.0	5 22.2	+ 7 17.7	+0.8502	0.5755	0.1099	+90	+21
A Geminorum	5.7	1.73	3.5	25 15.1	8 56.2	+10 43.5	+0.2500	0.5750	0.1199	+59	−13
κ Geminorum	3.7	1.70	2.7	24 38.9	17 30.3	− 5 2.1	−0.2540	0.5732	0.1428	+30	−40
82 Geminorum	6.5	1.68	2.7	23 24.0	19 12.7	− 3 23.5	+0.7838	0.5725	0.1472	+90	+14
7 Cancri	6.3	+1.65	+ 2.0	+22 21.7	**7** 1 31.7	+ 2 41.2	+0.8662	0.5705	−0.1631	+90	+17
μ^1 Cancri	6.3	1.65	1.9	22 55.9	2 32.3	+ 3 39.5	+0.1161	0.5702	0.1656	+50	−23
B. A. C. 2703	7.5	1.65	1.9	22 45.4	2 39.5	+ 3 46.4	+0.2749	0.5699	0.1660	+60	−15
μ^2 Cancri	5.7	1.64	+ 1.9	21 53.0	3 9.6	+ 4 15.4	+1.0860	0.5699	0.1671	+90	+32
				NEW	*MOON.*						
α Leonis	1.3	+1.46	− 3.8	+12 28.4	**9** 7 19.0	+ 6 32.2	−0.9005	0.5479	−0.2622	− 4	−78
44 Leonis	6.0	1.46	4.8	9 18.7	14 56.8	−10 5.7	+0.2352	0.5451	0.2700	+57	−29
45 Leonis	6.0	1.48	4.8	10 17.4	16 1.6	− 9 3.2	−1.0390	0.5446	0.2711	−13	−80
ρ Leonis	4.0	1.48	5.1	9 50.4	18 22.6	− 6 46.9	−1.2250	0.5441	0.2731	−27	−80
48 Leonis	5.5	+1.45	− 5.4	+ 7 29.2	19 18.7	− 5 52.7	+0.8716	0.5438	−0.2738	+90	+ 4
49 Leonis	6.0	1.47	5.2	9 11.2	19 23.8	− 5 47.8	−0.8515	0.5437	0.2739	− 1	−81
37 Sextantis	6.3	1.47	6.0	6 55.2	**10** 0 27.6	− 0 54.3	+0.0166	0.5423	0.2774	+45	−42
38 Sextantis	7.8	1.48	6.1	6 53.6	1 1.2	− 0 21.8	−0.1115	0.5419	0.2780	+38	−49
56 Leonis	6.6	1.49	6.5	6 44.3	5 1.3	+ 3 30.2	−1.0750	0.5411	0.2802	−15	−83
d Leonis	5.3	+1.47	− 7.1	+ 4 10.4	7 6.6	+ 5 31.3	+0.8982	0.5406	−0.2814	+79	+ 4
75 Leonis	5.7	1.49	8.2	2 34.8	14 49.4	−11 1.4	+0.3059	0.5396	0.2843	+61	−28
76 Leonis	6.3	1.49	8.2	2 13.1	15 34.9	−10 17.4	+0.4487	0.5394	0.2844	+70	+21
79 Leonis	6.0	1.50	8.4	+ 1 58.6	17 56.9	− 8 0.2	+0.0183	0.5391	0.2848	+45	−43
υ Leonis	4.4	1.51	9.5	− 0 15.2	23 55.4	− 2 13.6	+0.5383	0.5386	0.2854	+76	−16
χ Virginis	5.2	+1.68	−13.5	− 7 25.6	**12** 4 37.2	+ 1 30.7	−0.3943	0.5399	−0.2738	+22	−66
28 Virginis	7.0	1.70	13.5	6 55.9	5 51.4	+ 2 42.4	−1.2260	0.5401	0.2729	−28	−90
ψ Virginis	5.2	1.74	14.3	8 58.7	11 28.9	+ 8 0.6	−0.7082	0.5431	0.2686	− 5	−90
g Virginis	5.9	1.80	14.8	10 11.3	17 35.2	− 9 57.7	−1.1210	0.5453	0.2623	−21	−90
i Virginis	5.7	1.90	15.5	12 10.3	**13** 1 59.5	− 1 50.9	−1.2970	0.5484	0.2522	−39	−90
75 Virginis	6.0	+1.92	−16.4	−14 50.0	4 41.5	+ 0 45.5	+0.6977	0.5495	−0.2485	+75	− 7
83 Virginis	6.0	2.00	17.1	15 39.7	9 47.9	+ 5 41.1	+0.2799	0.5517	0.2409	+52	−29
85 Virginis	6.5	2.01	17.0	15 15.0	10 16.9	+ 6 9.1	−0.2446	0.5518	0.2402	+25	−58
B. A. C. 4722	5.8	2.21	17.7	17 43.2	23 9.9	− 5 21.5	−0.5887	0.5585	0.2182	+ 5	−83
B. A. C. 4923	7.3	2.58	19.4	20 57.0	**14** 16 46.2	+11 32.0	−0.9851	0.5671	0.1814	−22	−90
42 Libræ	5.7	+2.90	−17.9	−23 29.1	**15** 10 15.8	+ 4 21.8	−1.2130	0.5751	−0.1383	−46	−90
B. A. C. 5197	6.0	2.95	18.0	24 23.7	12 28.7	+ 6 29.5	−0.5832	0.5762	0.1321	− 4	−85
b Scorpii	5.3	3.01	18.1	25 26.4	14 31.6	+ 8 27.7	+0.2201	0.5771	0.1266	+37	−31
A^2 Scorpii	5.2	3.02	17.8	25 1.3	15 35.2	+ 9 28.8	−0.3414	0.5773	0.1238	+ 8	−65
B. A. C. 5253	5.8	3.01	17.5	24 13.7	15 42.9	+ 9 36.2	−1.1690	0.5773	0.1234	−43	−90
B. A. C. 5255	6.0	+3.03	−17.8	−25 6.4	15 49.5	+ 9 42.5	−0.2834	0.5775	−0.1231	+11	−61
3 Scorpii	6.7	3.03	17.8	24 56.4	16 0.5	+ 9 53.1	−0.4764	0.5775	0.1226	+ 1	−75
4 Scorpii	6.3	2.05	18.1	25 57.9	16 19.7	+10 11.6	+0.5344	0.5776	0.1217	+54	−14
B. A. C. 5314	5.7	2.10	17.5	25 34.8	19 27.9	−10 47.6	−0.2291	0.5785	0.1130	+13	−58
B. A. C. 5347	6.0	3.15	17.3	26 3.1	21 21.0	− 8 58.9	+0.0479	0.5793	0.1077	+26	−41
σ Scorpii	3.4	+3.24	−16.5	−25 20.9	**16** 2 32.7	− 3 59.5	−1.1980	0.5806	−0.0931	−49	−90
α Scorpii	1.2	3.32	16.3	26 12.4	5 46.6	− 0 53.2	−0.6006	0.5811	0.0836	− 9	−88
τ Scorpii	3.2	3.40	16.5	28 0.3	8 17.8	+ 1 32.1	+1.0520	0.5817	0.0761	+62	+22
B. A. C. 5800	7.5	3.68	13.4	26 51.8	23 24.1	− 7 57.6	−0.9404	0.5826	0.0309	−34	−90
43 Ophiuchi	5.8	3.79	13.0	28 2.7	**17** 2 58.1	− 4 31.9	+0.1955	0.5825	−0.0201	+26	−32
3 Sagittarii	4–6	+3.95	−10.7	−27 47.7	12 31.7	+ 4 39.1	−0.1199	0.5809	+0.0087	+ 8	−51
B. A. C. 6127	5.1	4.10	8.9	28 28.2	20 41.0	−11 30.8	+0.7560	0.5786	0.0327	+62	0
B. A. C. 6194	5.1	4.12	7.6	27 4.9	**18** 0 42.7	− 7 38.5	−0.5430	0.5769	0.0445	−10	−82
φ Sagittarii	3.7	4.27	4.7	27 6.0	11 55.4	+ 3 8.4	+0.1543	0.5718	0.0757	+29	−35
σ Sagittarii	2.3	4.29	3.5	26 25.6	15 54.1	+ 6 58.1	−0.2318	0.5693	0.0868	+10	−58
ψ Sagittarii	5.4	+4.34	− 1.1	−25 26.1	**19** 0 23.7	− 8 51.2	−0.4476	0.5643	+0.1087	+ 1	−73

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	$N.$	$S.$
		Δα	Δδ								
		s	"	° ′	d h m	h m				°	°
χ^1 Sagittarii	5.4	+4.35	+ 0.1	−24 42.6	**19** 4 32.5	− 4 51.5	−0.7447	0.5613	+0.1191	−14	−90
χ^2 Sagittarii	6.3	4.35	0.1	24 37.0	4 35.3	− 4 48.8	−0.8381	0.5611	0.1191	−19	−90
h^1 Sagittarii	5–7	4.40	1.2	24 56.8	9 9.3	− 0 24.7	+0.0813	0.5581	0.1299	+30	−39
h^2 Sagittarii	4.7	4.41	1.5	25 6.8	9 26.5	− 0 8.1	+0.2953	0.5578	0.1307	+42	−27
53 Sagittarii	6.7	4.37	2.0	23 39.0	10 49.4	+ 1 11.8	−1.0580	0.5569	0.1340	−32	−90
B. A. C. 6727	6.2	+4.37	+ 2.1	−23 40.0	10 57.0	+ 1 19.1	−1.0390	0.5568	+0.1343	−31	−90
4 Capricorni	6.1	4.42	6.5	22 7.8	**20** 3 49.5	− 6 23.7	−0.1068	0.5438	0.1697	+25	−50
20 Capricorni	6.3	4.38	11.4	19 26.1	23 21.9	−11 29.9	+0.6668	0.5286	0.2031	+70	− 8
θ Capricorni	4.1	4.35	12.3	17 38.6	**21** 2 27.8	− 8 29.8	−0.6265	0.5266	0.2077	+ 4	−86
31 Capricorni	6.7	4.36	13.4	17 53.7	8 30.5	− 2 38.4	+0.9245	0.5222	0.2158	+72	+ 7
ι Capricorni	4.4	+4.34	+13.6	−17 16.4	10 29.7	− 0 43.0	+0.6874	0.5206	+0.2183	+72	− 7
42 Capricorni	5.6	4.25	15.8	14 30.4	20 16.7	+ 8 46.2	−0.1138	0.5140	0.2295	+33	−50
44 Capricorni	6.1	4.26	16.2	14 52.2	21 2.8	+ 9 31.0	+0.4569	0.5137	0.2303	+64	−20
45 Capricorni	6.3	4.27	16.2	15 13.3	21 31.6	+ 9 58.9	+0.9499	0.5131	0.2306	+75	+ 8
μ Capricorni	5.2	4.25	17.1	14 2.2	**22** 2 18.3	− 9 22.9	+0.7778	0.5101	0.2354	+71	− 2
e^1 Aquarii	6.8	+4.17	+18.6	−11 19.6	11 23.1	− 0 34.0	+0.0073	0.5051	+0.2430	+41	−43
e^2 Aquarii	5.6	4.18	18.6	12 4.3	11 25.7	− 0 31.5	+0.8292	0.5051	0.2432	+78	0
*B. A. C. 7740	7.0	4.18	18.8	11 34.4	12 19.0	+ 0 20.3	+0.5027	0.5047	0.2435	+69	−18
B. A. C. 7774	6.7	4.12	19.2	9 33.2	14 46.7	+ 2 43.7	−1.0960	0.5030	0.2452	−19	−90
67 Aquarii	6.4	4.04	21.1	7 30.1	**23** 5 2.0	− 7 25.1	+0.2189	0.4966	0.2531	+54	−32
B. A. C. 7986	5.9	+4.00	+21.8	− 5 32.1	11 36.8	− 1 1.2	−0.2613	0.4941	+0.2557	+30	−58
B. A. C. 7993	6.6	3.99	21.9	5 21.6	12 46.9	+ 0 7.0	−0.1535	0.4937	0.2561	+35	−52
B. A. C. 8017	6.1	3.98	22.1	5 15.9	15 7.8	+ 2 24.1	+0.3402	0.4929	0.2567	+62	−26
B. A. C. 8094	5.4	3.94	22.9	4 3.3	22 58.1	+10 1.6	+1.0350	0.4907	0.2581	+86	+12
11 Piscium	6.4	3.89	23.4	2 21.4	**24** 6 45.9	− 6 23.2	+1.1840	0.4891	0.2588	+88	+23
12 Piscium	6.8	+3.88	+23.3	− 1 36.1	6 48.1	− 6 21.1	+0.3616	0.4891	+0.2588	+64	−25
13 Piscium	6.4	3.88	23.5	1 39.2	8 10.8	− 5 0.6	+0.7766	0.4889	0.2588	+78	− 4
14 Piscium	5.9	3.87	23.6	− 1 48.9	9 24.5	− 3 48.9	+1.2730	0.4889	0.2588	+88	+30
15 Piscium	6.6	3.84	23.4	+ 0 44.7	10 10.3	− 3 4.3	−1.3520	0.4885	0.2588	−39	−89
λ Piscium	4.5	3.81	23.5	1 12.9	13 53.2	+ 0 33.7	−0.9097	0.4878	0.2583	− 4	−89
21 Piscium	5.8	+3.81	+24.0	+ 0 30.3	18 4.0	+ 4 37.8	+0.9528	0.4874	+0.2578	+90	+ 7
22 Piscium	5.0	3.79	23.8	2 21.5	19 29.1	+ 6 0.6	−0.7268	0.4875	0.2576	+ 6	−85
25 Piscium	6.4	3.79	23.9	1 31.1	20 7.0	+ 6 37.4	+0.3625	0.4876	0.2576	+64	−25
45 Piscium	6.9	3.69	23.8	7 7.4	**25** 14 33.0	+ 0 32.9	−1.1370	0.4877	0.2518	−19	−83
51 Piscium	5.8	3.67	24.0	6 23.3	18 19.3	+ 4 13.1	+0.6241	0.4883	0.2498	+84	−11
75 Piscium	6.0	+3.58	+23.3	+12 24.3	**26** 13 20.0	− 1 16.3	−1.4060	0.4925	+0.2376	−55	−78
η Piscium	3.7	3.52	22.6	14 49.0	**27** 2 54.8	+11 55.1	−0.9319	0.4973	0.2256	− 7	−75
101 Piscium	6.3	3.52	22.6	14 8.2	5 13.9	− 9 49.7	+0.3421	0.4984	0.2234	+63	−21
104 Piscium	7.5	3.51	22.7	13 45.9	7 6.1	− 8 0.7	+1.1720	0.4991	0.2213	+90	+28
105 Piscium	6.3	3.51	22.1	15 53.1	7 18.4	− 7 48.8	−1.1350	0.4995	0.2212	−21	−74
4 Arietis	5.7	+3.49	+21.9	+16 26.7	11 50.1	− 3 24.7	−0.7654	0.5016	+0.2163	+ 3	−70
B. A. C. 549	8.2	3.49	21.9	16 30.5	11 55.6	− 3 19.4	−0.8172	0.5016	0.2161	0	−73
ι Arietis	5.7	3.47	21.5	17 19.0	16 40.3	+ 1 17.0	−0.7003	0.5036	0.2107	+ 6	−73
15 Arietis	5.7	3.46	20.7	19 1.0	23 34.3	+ 7 59.0	−1.1580	0.5075	0.2020	−25	−71
B. A. C. 686	7.2	3.44	20.7	19 7.9	**28** 1 14.8	+ 9 36.8	−0.9508	0.5084	0.1997	− 9	−71
θ Arietis	5.7	+3.44	+20.5	+19 25.5	3 26.3	+11 44.3	−0.8379	0.5095	+0.1969	− 2	−71
23 Arietis	7.5	3.43	20.4	19 13.0	3 57.9	−11 45.1	−0.5039	0.5099	0.1962	+17	−62
26 Arietis	6.0	3.40	20.2	19 23.9	9 48.5	− 6 5.0	+0.4149	0.5131	0.1877	+69	−13
ν Arietis	5.7	3.41	19.1	21 31.0	13 53.8	− 2 7.1	−1.1730	0.5157	0.1817	−28	−68
μ Arietis	6.0	3.38	19.6	19 34.4	15 41.8	− 0 22.4	+1.3020	0.5168	0.1788	+90	+50
B. A. C. 920	7.0	+3.35	+18.6	+21 12.5	23 49.2	+ 7 29.9	+0.8935	0.5220	+0.1655	+90	+16
ε Arietis	4.6	3.35	18.7	20 55.8	23 59.2	+ 7 39.5	+1.2270	0.5222	0.1650	+90	+43
64 Arietis	5.7	3.31	16.5	24 21.6	**29** 11 59.2	− 4 43.4	−0.6961	0.5302	0.1433	+ 5	−65
7 Tauri	6.0	3.28	16.2	24 7.2	16 45.6	− 0 6.3	+0.2287	0.5333	0.1339	+57	−15
11 Tauri	6.7	3.28	15.5	24 59.9	19 41.4	+ 2 43.6	−0.3510	0.5355	0.1279	+ 6	−45
g Pleiadum	6.3	+3.26	+15.7	+23 58.0	21 34.6	+ 4 33.1	+1.0200	0.5365	+0.1240	+90	+30

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
17 Tauri	4.3	+3.26	+15.8	+23 47.5	**29** 21 36.7	+ 4 35.2	+1.2140	0.5365	+0.1240	+90	+47
18 Tauri	6.3	3.26	15.5	24 31.1	21 43.9	+ 4 42.1	+0.4328	0.5367	0.1236	+72	-13
19 Tauri	5.0	3.25	15.7	24 8.7	21 45.6	+ 4 43.8	+0.8474	0.5367	0.1236	+90	+19
20 Tauri	5.0	3.25	15.7	24 2.8	22 2.9	+ 5 0.5	+0.9879	0.5370	0.1231	+90	+28
21 Tauri	7.0	3.25	15.6	24 14.1	22 4.9	+ 5 2.4	+0.7870	0.5370	0.1231	+90	+15
22 Tauri	7.0	+3.25	+15.6	+24 12.5	22 8.8	+ 5 6.1	+0.8231	0.5370	+0.1228	+90	+17
B. A. C. 1171	7.8	3.24	15.5	24 1.8	23 16.7	+ 6 11.8	+1.1550	0.5375	0.1205	+90	+41
B. A. C. 1192	6.0	3.26	15.0	25 16.2	**30** 0 5.2	+ 6 58.6	-0.1040	0.5386	0.1188	+38	-31
f Tauri	6.0	3.20	13.7	26 12.8	9 23.1	- 8 2.4	-0.1237	0.5444	0.0984	+37	-30
φ Tauri	5.3	3.19	12.9	27 6.3	13 37.3	- 3 57.0	-0.7004	0.5470	0.0884	+ 4	-62
χ Tauri	5.7	+3.15	+13.3	+25 23.2	14 38.6	- 2 57.8	+1.2590	0.5476	+0.0860	+90	+57
W. iv, 1421	6.0	3.04	9.7	27 54.2	**31** 11 4.0	- 7 15.9	-0.2281	0.5589	0.0348	+32	-34
22 Aurigæ	7.0	3.01	8.6	28 50.7	16 50.7	- 1 41.8	-1.0830	0.5613	0.0197	-25	-61
β Tauri	1.8	+2.99	+ 8.4	+28 31.3	18 4.7	- 0 30.5	-0.7120	0.5618	+0.0161	+ 2	-60
SEPTEMBER.											
136 Tauri	5.3	+2.86	+7.2	+27 35.3	**1** 5 25.6	+10 25.1	+0.2941	0.5661	-0.0151	+62	0
49 Aurigæ	5.7	2.72	4.7	28 6.3	22 44.6	+ 3 5.0	-0.9319	0.5696	0.0637	-12	-62
37 Geminorum	6.3	2.57	3.9	25 30.4	**2** 7 5.1	+11 6.8	+1.1730	0.5698	0.0867	+90	+47
39 Geminorum	6.3	+2.57	+3.5	+26 13.1	8 30.6	-11 31.0	+0.2987	0.5698	-0.0907	+62	- 7
40 Geminorum	6.3	2.57	3.5	26 3.4	8 47.1	-11 15.1	+0.4437	0.5698	0.0915	+73	0
W. vi, 1656	8.2	2.57	2.9	26 59.4	10 33.6	- 9 32.7	-0.6997	0.5699	0.0965	+ 4	-62
47 Geminorum	6.0	2.54	2.4	27 1.6	13 40.9	- 6 32.4	-1.0500	0.5697	0.1050	-21	-63
49 Geminorum	7.2	2.52	2.6	25 55.3	14 17.7	- 5 57.0	+0.0400	0.5694	0.1067	+46	-22
B. A. C. 2363	7.3	+2.49	+2.8	+24 53.4	14 59.0	- 5 17.2	+1.0420	0.5694	-0.1085	+90	+34
52 Geminorum	6.3	2.49	2.8	25 3.9	15 5.0	- 5 11.4	+0.8472	0.5694	0.1087	+90	+21
A Geminorum	5.7	2.46	2.1	25 15.0	18 42.8	- 1 41.8	+0.2412	0.5692	0.1185	+58	-13
κ Geminorum	3.7	2.36	1.1	24 38.8	**3** 3 25.1	+ 6 40.8	-0.2658	0.5680	0.1414	+29	-41
82 Geminorum	6.3	2.33	1.1	23 23.9	5 9.0	+ 8 20.8	+0.7789	0.5674	0.1457	+90	+13
7 Cancri	6.3	+2.25	+0.4	+22 21.7	11 33.1	- 9 29.4	+0.8578	0.5658	-0.1618	+90	+16
μ^1 Cancri	6.3	2.25	0.1	22 55.9	12 34.4	- 8 30.3	+0.1063	0.5657	0.1643	+50	-24
B. A. C. 2703	7.5	2.24	0.1	22 45.4	12 41.7	- 8 23.3	+0.2658	0.5657	0.1646	+59	-16
μ^2 Cancri	5.7	2.23	+0.2	21 53.0	13 12.1	- 7 54.0	+1.0800	0.5656	0.1658	+90	+31
B. A. C. 2788	6.0	2.18	-0.4	21 4.5	18 30.3	- 2 47.7	+0.9922	0.5643	0.1783	+90	+23
η Cancri	5.4	+2.12	-1.1	+20 47.7	23 44.7	+ 2 15.2	+0.3319	0.5624	-0.1903	+64	-15
35 Cancri	6.3	2.10	1.0	19 56.8	**4** 0 52.0	+ 3 20.1	+0.9634	0.5624	0.1928	+90	+20
B. A. C. 2907	8.8	2.08	1.2	19 57.4	2 29.8	+ 4 54.3	+0.6339	0.5616	0.1963	+88	0
38 Cancri	7.0	2.08	1.3	20 8.7	2 43.8	+ 5 7.8	+0.3957	0.5616	0.1969	+68	-13
B. A. C. 2914	7.2	2.07	1.2	29 54.4	2 47.5	+ 5 11.4	+0.6269	0.5616	0.1969	+87	- 1
39 Cancri	7.0	+2.08	-1.3	+20 22.5	2 53.8	+ 5 17.5	+0.1291	0.5616	-0.1972	+51	-26
40 Cancri	7.3	2.08	1.3	20 20.3	2 55.9	+ 5 19.5	+0.1597	0.5616	0.1972	+53	-25
B. A. C. 2919	7.3	2.07	1.3	20 2.2	3 0.7	+ 5 24.1	+0.4519	0.5616	0.1974	+72	-10
ε Cancri	7.2	2.07	1.2	19 54.7	3 2.9	+ 5 26.2	+0.5709	0.5616	0.1975	+82	- 4
e Cancri	7.1	2.07	1.3	20 5.3	3 9.7	+ 5 32.7	+0.3685	0.5615	0.1977	+66	-14
B. A. C. 2925	7.7	+2.07	-1.3	+19 56.9	3 15.4	+ 5 38.2	+0.4925	0.5615	-0.1980	+75	- 8
B. A. C. 2931	7.5	2.07	1.4	20 14.7	3 38.1	+ 6 0.1	+0.1154	0.5614	0.1988	+50	-27
68 Cancri	7.5	1.97	2.0	17 29.3	12 11.8	- 9 44.8	+1.1330	0.5586	0.2164	+90	+29
71 Cancri	8.0	1.95	2.3	17 48.3	13 55.8	- 8 4.5	+0.4343	0.5581	0.2197	+70	-13
B. A. C. 3103	7.5	1.95	2.3	17 31.9	14 8.9	- 7 51.9	+0.6645	0.5578	0.2202	+90	- 1
78 Cancri	7.8	+1.95	-2.5	+17 53.4	15 20.8	- 6 42.5	+0.0354	0.5578	-0.2224	+46	-33
80 Cancri	6.8	1.95	2.8	18 28.2	16 35.9	- 5 30.2	-0.8305	0.5571	0.2247	- 2	-72
83 Cancri	5.7	1.93	3.2	18 8.7	19 39.5	- 2 33.4	-1.1960	0.5562	0.2302	-28	-72
7 Leonis	6.1	1.92	3.4	14 50.5	**5** 3 4.5	+ 4 36.0	+0.3785	0.5539	0.2427	+66	-28
11 Leonis	6.8	1.81	3.6	14 48.9	4 1.1	+ 5 30.6	+0.1724	0.5539	0.2442	+53	-29
ψ Leonis	6.0	+1.80	-3.8	+14 29.7	6 31.4	+ 7 55.6	-0.1220	0 5527	-0.2480	+37	-45

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
21 Leonis	6.8	+1.77	− 4.1	+12 19.6	**5** 9 40.4	+10 58.0	+1.2620	0.5521	−0.2527	+90	+36
23 Leonis	6.5	1.77	4.1	13 33.0	9 45.2	+11 2.6	+0.0167	0.5518	0.2528	+45	−38
JUPITER				13 45.0	12 39.0	−10 9.7	−0.9217	0.5429	0.2538	− 6	−76
ν Leonis	5.3	1.75	4.5	12 56.3	12 56.6	− 9 52.7	−0.1849	0.5511	0.2571	+34	−49
A Leonis	4.7	1.70	4.7	10 30.3	17 16.0	− 5 42.4	+1.1190	0.5499	0.2627	+90	+22
α Leonis	1.3	+1.71	− 4.9	+12 28.4	17 27.9	− 5 30.8	−0.8960	0.5499	−0.2628	− 4	−78
				NEW	*MOON.*						
χ Virginis	5.2	1.55	12.2	− 7 25.6	**8** 13 16.9	+11 58.2	−0.3578	0.5508	0.2788	+24	−64
28 Virginis	7.0	1.56	12.2	6 55.9	14 28.7	−10 52.5	−1.1800	0.5509	0.2777	−24	−90
ψ Virginis	5.2	+1.57	−12.8	− 8 58.7	19 55.7	− 5 36.9	−0.6651	0.5527	−0.2730	+ 8	−88
g Virginis	5.9	1.61	13.3	10 11.3	**9** 1 50.3	+ 0 5.2	−1.0700	0.5549	0.2667	−18	−90
i Virginis	5.7	1.67	14.1	12 10.2	9 58.2	+ 7 55.6	−1.2400	0.5582	0.2563	−33	−90
75 Virginis	6.0	1.69	14.7	14 49.9	12 34.9	+10 26.7	+0.7268	0.5594	0.2524	+75	− 5
83 Virginis	6.0	1.74	15.4	15 39.6	17 31.4	− 8 47.6	+0.3169	0.5616	0.2449	+55	−27
85 Virginis	6.5	+1.75	−15.2	−15 14.9	17 59.5	− 8 20.5	−0.2046	0.5618	−0.2441	+27	−55
B. A. C. 4722	5.8	1.90	15.9	17 43.2	**10** 6 27.7	+ 3 40.0	−0.6613	0.5676	0.2216	+ 1	−90
B. A. C. 4923	7.3	2.21	17.8	20 57.0	23 32.4	− 3 54.2	−0.9162	0.5769	0.1840	−18	−90
42 Libræ	5.7	2.47	16.6	23 29.1	**11** 16 34.9	−11 31.6	−1.1420	0.5822	0.1396	−39	−90
B. A. C. 5197	6.0	2.52	16.7	24 23.7	18 44.6	− 9 27.0	−0.5189	0.5829	0.1337	− 1	−78
b Scorpii	5.3	+2.56	−16.9	−25 26.4	20 44.7	− 7 31.7	+0.2749	0.5834	−0.1280	+40	−28
A^2 Scorpii	5.2	2.58	16.6	25 1.3	21 47.0	− 6 31.9	−0.2783	0.5837	0.1250	+11	−61
B. A. C. 5253	5.8	2.57	16.4	24 13.7	21 54.5	− 6 24.7	−1.0970	0.5839	0.1247	−37	−90
B. A. C. 5255	6.0	2.58	16.6	25 6.4	22 0.9	− 6 18.6	−0.2211	0.5839	0.1244	+14	−57
3 Scorpii	6.7	2.58	16.6	24 56.4	22 11.6	− 6 8.3	−0.4117	0.5839	0.1239	+ 4	−70
4 Scorpii	6.3	+2.60	−16.9	−25 57.9	22 30.5	− 5 50.1	+0.5875	0.5839	−0.1229	+58	−11
π Scorpii	3.4	2.62	16.7	25 49.2	23 49.0	− 4 34.8	+0.2804	0.5842	0.1191	+39	−28
B. A. C. 5314	5.7	2.65	16.4	25 34.8	**12** 1 34.6	− 2 53.5	−0.1674	0.5851	0.1142	+15	−54
B. A. C. 5347	6.0	2.70	16.4	26 3.1	3 25.4	− 1 7.0	+0.1049	0.5851	0.1086	+29	−38
σ Scorpii	3.4	2.79	15.6	25 20.9	8 31.1	+ 3 46.4	−1.1270	0.5860	0.0937	−42	−90
α Scorpii	1.2	+2.87	−15.5	−26 12.4	11 41.5	+ 6 49.2	−0.5338	0.5862	−0.0842	− 6	−81
τ Scorpii	3.2	2.95	15.7	28 0.3	14 10.2	+ 9 11.9	+1.1020	0.5866	0.0766	+62	+26
B. A. C. 5800	7.5	3.24	13.4	26 51.8	**13** 5 4.0	− 0 30.3	−0.8720	0.5856	0.0311	−30	−90
38 Ophiuchi	6.7	3.26	12.7	26 31.1	6 24.1	+ 0 46.7	−1.2680	0.5853	0.0270	−62	−90
43 Ophiuchi	5.8	3.33	13.0	28 2.7	8 35.6	+ 2 52.9	+0.2546	0.5848	−0.0203	+29	−29
3 Sagittarii	4-6	+3.52	−10.9	−27 47.7	18 4.6	+11 59.3	−0.0571	0.5821	+0.0086	+11	−47
B. A. C. 6127	5.1	3.68	9.4	28 28.3	**14** 2 11.4	− 4 13.0	+0.8145	0.5789	0.0326	+62	+ 4
B. A. C. 6194	5.1	3.71	8.1	27 4.8	6 12.3	− 0 21.5	−0.4803	0.5769	0.0444	+ 7	−76
φ Sagittarii	3.7	3.90	5.5	27 6.0	17 24.5	+10 24.9	+0.2117	0.5705	0.0758	+32	−32
σ Sagittarii	2.3	3.94	4.4	26 25.6	21 23.5	− 9 45.1	−0.1719	0.5679	0.0863	+13	−54
ψ Sagittarii	5.4	+4.02	− 2.1	−25 26.2	**15** 5 54.7	− 1 32.9	−0.3893	0.5619	+0.1081	+ 4	−68
χ^1 Sagittarii	5.4	4.05	0.9	24 42.6	10 4.7	+ 2 28.1	−0.6884	0.5589	0.1182	−10	−90
χ^2 Sagittarii	6.3	4.05	0.8	24 37.0	10 7.7	+ 2 30.9	−0.7802	0.5586	0.1182	−16	−90
χ^3 Sagittarii	5.6	4.03	− 0.6	24 10.0	10 11.2	+ 2 34.3	−1.2490	0.5586	0.1184	−52	−90
h^1 Sagittarii	5-7	4.12	+ 0.2	24 56.8	14 43.1	+ 6 56.4	+0.1362	0.5551	0.1290	+33	−36
h^2 Sagittarii	4.7	+4.12	+ 0.3	−25 6.8	15 0.4	+ 7 13.1	+0.3503	0.5551	+0.1297	+45	−24
53 Sagittarii	6.7	4.09	1.0	23 39.9	16 23.8	+ 8 33.5	−1.0030	0.5539	0.1327	−28	−90
B. A. C. 6727	6.2	4.09	1.1	23 40.0	16 31.5	+ 8 40.9	−0.9842	0.5537	0.1331	−27	−90
4 Capricorni	6.1	4.22	5.5	22 7.8	**16** 9 32.0	+ 1 6.3	−0.0553	0.5412	0.1683	+28	−47
19 Capricorni	6.1	4.24	10.3	18 18.8	**17** 2 57.1	− 6 2.8	−0.9632	0.5269	0.1976	−17	−90
20 Capricorni	6.3	+4.26	+10.6	−19 26.1	5 15.8	− 3 48.5	+0.7086	0.5252	+0.2011	+71	− 5
21 Capricorni	6.4	4.23	10.3	17 56.0	5 54.4	− 3 11.1	−0.7754	0.5247	0.2022	− 5	−90
θ Capricorni	4.1	4.24	11.6	17 38.6	8 23.8	− 0 46.4	−0.5888	0.5229	0.2056	+ 5	−83
31 Capricorni	6.7	4.28	12.7	17 53.7	14 30.3	+ 5 8.8	+0.9654	0.5184	0.2136	+72	+10
ι Capricorni	4.4	4.28	13.2	17 16.4	16 30.8	+ 7 5.5	+0.7224	0.5171	0.2162	+72	− 5
42 Capricorni	5.6	+4.23	+15.6	−14 30.4	**18** 2 23.8	− 7 19.2	−0.0870	0.5107	+0.2272	+34	−48

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
		s	"	° '	d h m	h m				°	°
pricorni	6.1	+4.25	+15.8	−14 52.2	**18** 3 10.4	− 6 34.0	+0.4859	0.5104	+0.2280	+66	−18
pricorni	6.3	4.26	15.8	15 13.3	3 39.5	− 6 5.7	+0.9788	0.5100	0.2287	+75	+10
pricorni	5.2	4.26	16.9	14 2.2	8 29.1	− 1 24.6	+0.8044	0.5076	0.2333	+76	− 1
uarii	6.8	4.21	18.8	11 19.6	17 38.8	+ 7 29.2	+0.0218	0.5024	0.2408	+41	−42
uarii	5.6	4.23	18.7	12 4.3	17 41.5	+ 7 31.8	+0.8467	0.5021	0.2408	+78	+ 1
A. C. 7740	7.0	+4.23	+18.9	−11 34.4	18 35.2	+ 8 24.1	+0.5190	0.5018	+0.2415	+70	−17
A. C. 7774	6.7	4.19	19.5	9 33.2	21 4.3	+10 48.9	−1.0860	0.5007	0.2433	−19	−90
uarii	6.4	4.17	22.0	7 30.0	**19** 11 26.3	+ 0 46.9	+0.2196	0.4950	0.2514	+54	−32
A. C. 7986	5.9	4.15	23.0	5 32.1	18 3.7	+ 7 13.3	−0.2656	0.4626	0.2540	+29	−58
A. C. 7993	6.6	4.14	23.2	5 21.6	19 14.2	+ 8 21.9	−0.1595	0.4925	0.2545	+35	−52
A. C. 8017	6.1	+4.14	+23.4	− 5 15.9	21 35.8	+10 39.6	+0.3375	0.4917	+0.2552	+62	−26
A. C. 8094	5.4	4.14	24.3	4 3.3	**20** 5 28.4	− 5 40.6	+1.0220	0.4900	0.2569	+86	+11
scium	6.4	4.12	25.1	2 21.4	13 18.1	+ 1 56.5	+1.1630	0.4887	0.2576	+88	+21
scium	6.8	4.12	25.2	1 36.1	13 20.2	+ 1 58.5	+0.3386	0.4885	0.2576	+63	−26
scium	6.4	4.12	25.3	1 39.2	14 43.2	+ 3 19.3	+0.7530	0.4884	0.2576	+82	− 5
scium	5.9	+4.13	+25.4	− 1 48.9	15 57.2	+ 4 31.3	+1.2490	0.4883	+0.2576	+88	+28
scium	6.6	4.09	25.6	+ 0 44.7	16 43.1	+ 5 15.9	−1.3810	0.4883	0.2576	−44	−89
scium	4.5	4.08	25.8	1 12.9	20 26.7	+ 8 53.7	−0.9417	0.4878	0.2574	− 6	−89
scium	5.8	4.09	26.1	0 30.3	**21** 0 38.0	−11 1.7	+0.9219	0.4877	0.2570	+90	+ 5
scium	5.0	4.08	26.3	2 21.5	2 3.3	− 9 38.7	−0.7654	0.4877	0.2567	+ 4	−80
scium	6.4	+4.08	+26.3	+ 1 31.7	2 41.3	− 9 1.8	+0.3283	0.4877	+0.2567	+62	−26
scium	6.9	4.06	27.1	7 7.4	21 8.0	+ 8 55.5	−1.1910	0.4890	0.2513	−24	−83
scium	5.8	4.06	27.3	6 23.3	**22** 0 54.3	−11 24.4	+0.5679	0.4895	0.2494	+79	−14
scium	3.7	4.06	26.6	14 49.0	**23** 9 27.8	− 3 44.3	−1.0230	0.4991	0.2255	−13	−75
scium	6.3	4.06	26.4	14 8.2	11 46.9	− 1 29.2	+0.2539	0.5000	0.2231	+58	−25
scium	7.5	+4.07	+26.4	+13 45.9	13 38.9	+ 0 19.6	+1.0780	0.5007	+0.2213	+90	+21
scium	6.3	4.07	26.1	15 53.1	13 51.3	+ 0 31.7	−1.2300	0.5009	0.2211	−30	−74
ietis	5.7	4.07	25.8	16 26.7	18 22.8	+ 4 55.5	−0.8634	0.5029	0.2160	− 3	−74
A. C. 549	8.2	4.07	25.8	16 30.5	18 28.3	+ 5 0.8	−0.9154	0.5030	0.2159	− 6	−73
ietis	5.7	4.08	25.4	17 19.0	23 12.8	+ 9 37.1	−0 8002	0.5052	0.2104	0	−73
ietis	5.7	+4.09	+24.8	+19 1.0	**24** 6 7.1	− 7 40.7	−1.2670	0.5087	+0.2017	−36	−71
A. C. 686	7.2	4.09	24.6	19 8.0	7 47.7	− 6 3.0	−1.0590	0.5095	0.1995	−17	−71
ietis	5.7	4.09	24.4	19 25.6	9 59.3	− 3 55.3	−0.9515	0.5106	0.1964	−10	−71
ietis	7.5	4.08	24.4	19 13.1	10 30.9	− 3 24.7	−0.6165	0.5111	0.1956	+11	−68
ietis	6.0	4.08	23.9	19 24.0	16 22.1	+ 2 16.1	+0.3035	0.5144	0.1875	+61	−18
ietis	5.7	+4.11	+23.1	+21 31.1	20 28.0	+ 6 14.6	−1.2920	0.5164	+0.1810	−42	−68
ietis	6.0	4.08	23.3	19 34.5	22 16.3	+ 7 59.6	+1.1870	0.5176	0.1782	+90	+37
A. C. 920	7.0	4.08	22.2	21 12.6	**25** 6 25.6	− 8 6.3	+0.7738	0.5225	0.1647	+90	+10
ietis	4.6	4.08	22.2	20 55.9	6 35.7	− 7 56.4	+1.1100	0.5225	0.1645	+90	+32
ietis	5.7	4.11	19.9	24 21.6	18 40.2	+ 3 45.2	−0.8290	0.5295	0.1424	− 4	−66
uri	6.0	+4.09	+19.4	+24 7.2	23 28.9	+ 8 24.6	+0.0994	0.5326	+0.1330	+49	−22
uri	6.7	4.10	18.6	24 59.9	**26** 2 26.3	+11 16.1	−0.4837	0.5339	0.1271	+17	−53
eiadum	6.3	4.07	18.7	23 58.0	4 20.5	−10 53.4	+0.8913	0.5351	0.1231	+90	−22
uri	4.3	4.07	18.7	23 47.5	4 22.7	−10 51.3	+1.0900	0.5351	0.1231	+90	+35
uri	5.0	4.07	18.6	24 8.7	4 31.7	−10 42.6	+0.7185	0.5353	0.1227	+90	+11
uri	5.0	+4.07	+18.6	+24 2.8	4 49.0	−10 25.8	+0.8618	0.5355	+0.1222	+90	+20
uri	7.0	4.08	18.5	24 14.1	4 51.1	−10 23.8	+0.6577	0.5357	0.1222	+90	+ 8
uri	7.0	4.08	18.5	24 15.5	4 55.1	−10 20.0	+0.6965	0.5357	0.1220	+90	+12
uri	8.0	4.07	18.6	23 47.9	5 31.9	− 9 44.4	+1.2220	0.5359	0.1207	+90	+48
uri	3.1	4.07	18.6	23 47.3	5 35.6	− 9 40.8	+1.2400	0.5359	0.1205	+90	+50
A. C. 1171	7.8	+4.07	+18.4	+24 1.8	6 3.7	− 9 13.6	+1.0350	0.5362	+0.1196	+90	+31
uri	6.2	4.06	18.4	23 49.4	6 23.1	− 8 54.9	+1.2950	0.5365	0.1187	+90	+60
A. C. 1192	6.0	4.09	18.2	25 16.2	6 52.7	− 8 26.3	−0.2406	0.5367	0.1180	+30	−38
uri	6.0	4.07	16.2	26 12.9	16 17.2	+ 0 37.4	−0.2674	0.5418	0.0972	+28	−37
uri	5.3	4 08	15.2	27 6.4	20 34 9	+ 4 48.3	−0.8468	0.5442	0.0876	− 6	−63
uri	5.7	+4.03	+15.6	+25 23.3	21 37.0	+ 5 48.3	+1.1280	0.5449	+0.0850	+90	+43

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

The Star's					At Conjunction in R. A.					Li Pa
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N
		s	″	° ′	d h m	h m				
W. iv, 1421	6.0	+3.96	+11.0	+27 54.2	**27** 18 23.7	+ 1 51.6	−0.3772	0.5538	+0.0343	+2
22 Aurigæ	7.0	3.95	9.6	28 50.7	**28** 0 17.8	+ 7 32.9	−1.2390	0.5559	0.0190	−4
β Tauri	1.8	3.93	9.3	28 31.4	1 33.5	+ 8 46.0	−0.8698	0.5563	+0.0157	–
136 Tauri	5.3	3.80	7.4	27 35.4	13 10.3	− 4 2.4	+0.1492	0.5590	−0.0149	+5
49 Aurigæ	5.7	3.64	3.5	28 6.3	**29** 6 57.1	−10 54.6	−1.0900	0.5614	0.0627	−2
37 Geminorum	6.3	+3.46	+ 1.5	+25 30.3	15 32.1	− 2 38.4	+1.0450	0.5613	−0.0854	+9
39 Geminorum	6.3	3.45	2.2	26 13.0	17 0.0	− 1 13.8	+0.1611	0.5613	0.0892	+5
40 Geminorum	6.3	3.45	2.1	26 3.3	17 17.0	− 0 57.4	+0.3079	0.5613	0.0899	+6
W. vi, 1656	8.2	3.46	1.5	26 59.4	19 6.7	+ 0 48.2	−0.8537	0.5613	0.0947	–
47 Geminorum	6.0	3.42	0.8	27 1.6	22 19.6	+ 3 54.2	−1.2080	0.5607	0.1030	−3
49 Geminorum	7.2	+3.39	+ 1.0	+25 55.3	22 57.5	+ 4 30.7	−0.1040	0.5607	−0.1047	+3
B. A. C. 2363	7.3	3.35	1.2	24 53.4	23 40.0	+ 5 11.6	+0.9128	0.5607	0.1064	+9
52 Geminorum	6.3	3.35	1.2	25 3.9	23 46.3	+ 5 17.7	+0.7171	0.5607	0.1068	+9
A Geminorum	5.7	3.31	+ 0.3	25 15.0	**30** 3 30.6	+ 8 53.9	+0.1020	0.5603	0.1163	+5
κ Geminorum	3.7	3.18	− 1.2	24 38.8	12 28.7	− 6 27.6	−0.4054	0.5589	0.1386	+2
82 Geminorum	6.3	+3.13	− 1.1	+23 23.9	14 15.8	− 4 44.4	+0.6494	0.5585	−0.1430	+9
84 Geminorum	6.8	3.08	1.2	22 36.1	16 11.5	− 2 52.8	+1.2040	0.5580	0.1477	+9
7 Cancri	6.3	3.02	2.0	22 21.7	20 51.5	+ 1 37.0	+0.7350	0.5571	0.1586	+9
μ¹ Cancri	6.3	3.02	2.3	22 55.9	21 54.6	+ 2 37.9	−0.0260	0.5569	0.1612	+4
B. A. C. 2703	7.5	3.01	2.3	22 45.4	22 2.1	+ 2 45.1	+0.1355	0.5567	0.1614	+5
μ² Cancri	5.7	+3.00	− 2.2	+21 53.0	22 33.5	+ 3 15.4	+0.9598	0.5564	−0.1627	+9
OCTOBER.										
B. A. C. 2788	6.0	+2.92	−2.7	+21 4.5	**1** 4 1.2	+ 8 31.3	+0.8774	0.5560	−0.1753	+9
η Cancri	5.4	2.84	3.8	20 47.6	9 24.8	−10 16.7	+0.1894	0.5540	0.1866	+5
35 Cancri	6.3	2.81	3.6	19 56.7	10 34.0	− 9 9.9	+0.8506	0.5537	0.1891	+9
B. A. C. 2899	7.2	2.78	3.7	19 37.7	11 38.6	− 8 7.6	+0.9701	0.5535	0.1913	+9
B. A. C. 2907	8.8	2.78	3.9	19 57.3	12 14.5	− 7 33.0	+0.5193	0.5534	0.1926	+7
38 Cancri	7.0	+2.78	−4.0	+20 8.6	12 28.9	− 7 19.0	+0.2786	0.5534	−0.1931	+6
B. A. C. 2914	7.2	2.78	4.0	19 54.3	12 32.7	− 7 15.4	+0.5124	0.5534	0.1932	+7
39 Cancri	7.0	2.78	4.1	20 22.4	12 39.1	− 7 9.2	+0.0086	0.5534	0.1934	+4
40 Cancri	7.3	2.78	4.1	20 20.2	12 41.4	− 7 7.0	+0.0378	0.5534	0.1936	+4
B. A. C. 2919	7.3	2.77	4.1	20 2.1	12 46.3	− 7 2.3	+0.3335	0.5533	0.1937	+6
ε Cancri	7.2	+2.77	−4.0	+19 54.6	12 48.5	− 7 0.2	+0.4555	0.5533	−0.1937	+72
ℓ Cancri	7.1	2.78	4.1	20 5.2	12 55.6	− 6 53.4	+0.2509	0.5531	0.1939	+58
B. A. C. 2925	7.7	2.77	4.1	19 56.8	13 1.3	− 6 47.9	+0.3763	0.5531	0.1942	+66
B. A. C. 2931	7.5	2.77	4.2	20 14.6	13 24.7	− 6 25.3	−0.0069	0.5529	0.1949	+43
68 Cancri	7.5	2.60	4.8	17 29.2	22 12.4	+ 2 3.8	+1.0310	0.5507	0.2122	+90
71 Cancri	8.0	+2.60	−5.2	+17 48.2	23 59.1	+ 3 46.8	+0.3275	0.5502	−0.2156	+63
B. A. C. 3103	7.5	2.59	5.1	17 31.8	**2** 0 12.6	+ 3 59.8	+0.5576	0.5501	0.2160	+80
78 Cancri	7.8	2.58	5.5	17 53.3	1 26.3	+ 5 10.9	−0.0767	0.5499	0.2182	+39
80 Cancri	6.8	2.58	5.8	18 28.1	2 43.3	+ 6 25.2	−0.9499	0.5498	0.2207	− 9
83 Cancri	5.7	2.53	6.2	18 8.7	5 51.4	+ 9 26.8	−1.3180	0.5491	0.2261	−43
7 Leonis	6.1	+2.39	−6.3	+14 50.5	13 26.6	− 7 13.8	+0.2787	0.5470	−0.2385	+60
11 Leonis	6.8	2.37	6.6	14 48.9	14 24.5	− 6 17.9	+0.0743	0.5468	0.2401	+48
ψ Leonis	6.0	2.35	6.8	14 29.7	16 58.0	− 3 49.7	−0.2209	0.5466	0.2440	+32
21 Leonis	6.8	2.30	7.0	12 19.6	20 10.8	− 0 43.5	+1.1780	0.5462	0.2488	+90
23 Leonis	6.3	2.30	7.0	13 33.0	20 15.7	− 0 38.8	−0.0774	0.5462	0.2488	+39
ν Leonis	5.3	+2.26	−7.3	+12 56.3	23 30.6	+ 2 29.5	−0.2754	0.5455	−0.2532	+29
Λ Leonis	4.7	2.17	7.3	10 30.3	**3** 3 54.6	+ 6 44.4	+1.0450	0.5448	0.2589	+9
α Leonis	1.3	2.20	7.8	12 28.4	4 6.8	+ 6 56.3	−0.9860	0.5448	0.2591	−1
44 Leonis	6.0	2.10	8.1	9 18.7	11 46.6	− 9 39.7	+0.1650	0.5442	0.2676	+5
45 Leonis	6.0	2.11	8.4	10 17.4	12 51.4	− 8 37.1	−1.1040	0.5441	0.2688	−1
μ Leonis	4.0	+2.08	−8.6	+ 9 50.4	15 12.3	− 6 20.9	−1.2850	0.5441	−0.2711	−3

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x′*	*y′*	N.	S.
		Δα	Δδ								
		s	"	° ′	d h m	h m				°	°
onis	5.5	+2.04	− 8.2	+ 7 29.2	**3** 16 7.8	− 5 27.4	+0.8114	0.5439	−0.2719	+90	0
onis	6.0	2.06	8.6	9 11.2	16 13.4	− 5 21.9	−0.9093	0.5439	0.2721	− 4	−81
xtantis	6.3	2.00	8.7	6 55.2	21 15.7	− 0 29.9	−0.0315	0.5439	0.2764	+42	−44
xtantis	7.8	2.00	8.8	6 53.6	21 49.1	+ 0 2.4	−0.1592	0.5439	0.2770	+35	−51
onis	6.6	1.97	9.2	6 44.2	**4** 1 46.5	+ 3 51.7	−1.1050	0.5439	0.2797	−17	−83
onis	5.3	+1.93	− 9.0	+ 4 10.3	3 50.7	+ 5 51.6	+0.8594	0.5443	−0.2809	+90	+ 2
onis	5.7	1.87	9.7	2 34.7	11 26.3	−10 48.2	+0.2848	0.5448	0.2848	+59	−29
onis	6.3	1.86	9.7	2 13.0	12 10.8	−10 5.3	+0.4296	0.5449	0.2851	+69	−21
onis	6.0	1.84	9.9	+ 1 58.5	14 29.9	− 7 50.9	+0.0066	0.5451	0.2859	+44	−43
onis	4.4	1.79	10.1	− 0 15.2	20 19.8	− 2 13.0	+0.5301	0.5464	0.2873	+76	−16
				NEW	*MOON.*						
A. C. 4722	5.8	+1.75	−14.5	−17 43.1	**7** 16 10.9	− 8 48.7	−0.5542	0.5776	−0.2238	+ 7	−80
A. C. 4923	7.3	1.95	16.2	20 56.9	**8** 8 43.2	+ 7 4.5	−0.7823	0.5866	0.1861	−10	−90
bræ	5.7	2.15	14.9	23 29.0	**9** 1 11.2	− 1 7.5	−0.9835	0.5936	0.1413	−27	−90
A. C. 5197	6.0	+2.18	−15.0	−24 23.6	3 16.7	+ 0 52.8	−0.3680	0.5943	−0.1351	+ 7	−67
orpii	5.3	2.22	15.1	25 26.3	5 12.7	+ 2 44.1	+0.4165	0.5950	0.1294	+48	−20
orpii	5.2	2.23	14.9	25 1.2	6 12.8	+ 3 41.6	−0.1278	0.5951	0.1263	+19	−51
A. C. 5253	5.8	2.22	14.7	24 13.6	6 20.0	+ 3 48.5	−0.9330	0.5953	0.1260	−25	−90
A. C. 5255	6.0	2.24	14.9	25 6.3	6 26.2	+ 3 54.5	−0.0714	0.5953	0.1257	+21	−48
orpii	6.7	+2.23	−14.9	−24 56.3	6 36.6	+ 4 4.5	−0.2590	0.5953	−0.1252	+14	−59
orpii	6.3	2.25	15.1	25 57.8	6 54.8	+ 4 21.9	+0.7240	0.5953	0.1243	+64	− 3
orpii	3.4	2.27	14.9	25 49.0	8 10.7	+ 5 34.6	+0.4238	0.5957	0.1205	+48	−20
A. C. 5314	5.7	2.29	14.8	25 34.7	9 52.7	+ 7 12.4	−0.0150	0.5961	0.1153	+23	−44
A. C. 5347	6.0	2.33	14.6	26 3.0	11 39.8	+ 8 55.1	+0.2548	0.5964	0.1097	+37	−29
orpii	3.4	+2.40	−14.1	−25 20.8	16 35.3	−10 21.7	−0.9521	0.5971	−0.0945	−29	−90
orpii	1.2	2.47	14.1	26 12.3	19 39.5	− 7 25.0	−0.3681	0.5971	0.0848	+ 2	−67
A. C. 5800	7.5	2.78	12.2	26 51.8	**10** 12 29.0	+ 8 42.5	−0.6845	0.5954	0.0309	−19	−90
hiuchi	4.9	2.77	12.8	26 27.2	12 56.0	+ 9 8.3	−1.1140	0.5954	0.0296	−47	−90
A. C. 5813	6.8	2.77	12.7	26 24.0	13 15.9	+ 9 27.5	−1.1790	0.5953	0.0284	−52	−90
hiuchi	6.7	+2.80	−11.9	−26 31.1	13 46.7	+ 9 57.0	−1.0740	0.5953	−0.0267	−44	−90
hiuchi	5.8	2.87	12.0	28 2.7	15 54.4	+11 59.4	+0.4270	0.5946	−0.0200	+40	−19
gittarii	4-6	3.03	10.3	27 47.7	**11** 1 7.3	− 3 10.4	+0.1227	0.5907	+0.0090	+21	−36
A. C. 6127	5.1	3.19	9.1	28 28.3	9 1.4	+ 4 24.5	+0.9870	0.5868	0.0334	+62	+17
A. C. 6194	5.1	3.21	7.9	27 4.7	12 56.5	+ 8 10.2	−0.2889	0.5816	0.0450	+ 3	−61
gittarii	3.7	+3.41	− 5.7	−27 6.0	23 53.8	− 5 18.4	+0.3996	0.5763	+0.0765	+43	−21
gittarii	2.3	3.45	4.7	26 25.6	**12** 3 48.1	− 1 33.0	+0.0205	0.5736	0.0871	+23	−42
gittarii	5.4	3.55	2.6	25 26.2	12 10.2	+ 6 30.1	−0.1936	0.5665	0.1088	+14	−55
gittarii	5.4	3.59	1.6	24 42.6	16 16.2	+10 27.1	−0.4868	0.5632	0.1190	0	−76
gittarii	6.3	3.59	1.5	24 37.0	16 19.0	+10 29.7	−0.5806	0.5630	0.1190	− 5	−84
gittarii	5.6	+3.57	− 1.3	−24 10.0	16 22.6	+10 33.2	−1.0460	0.5630	+0.1191	−33	−90
gittarii	5.7	3.65	0.8	24 56.8	20 50.6	− 9 8.6	+0.3296	0.5588	0.1296	+44	−25
gittarii	4.7	3.67	− 0.5	25 6.8	21 7.7	− 8 52.1	+0.5419	0.5585	0.1303	+56	−13
gittarii	6.7	3.64	+ 0.2	23 39.9	22 30.0	− 7 32.8	−0.8039	0.5575	0.1335	−16	−90
A. C. 6727	6.2	3.64	0.3	23 40.0	22 37.6	− 7 25.5	−0.7847	0.5573	0.1336	−15	−90
pricorni	6.1	+3.81	+ 4.3	−22 7.8	**13** 15 27.3	+ 8 48.9	+0.1348	0.5421	+0.1683	+37	−36
pricorni	6.1	3.87	9.0	18 18.9	**14** 8 46.7	+ 1 34.2	−0.7731	0.5271	0.1968	− 6	−90
pricorni	6.3	3.90	9.2	19 26.1	11 5.1	+ 3 48.2	+0.8886	0.5252	0.2003	+71	+ 6
pricorni	6.4	3.89	9.9	17 56.0	11 43.4	+ 4 25.3	−0.5985	0.5244	0.2010	+ 4	−84
pricorni	4.1	3.91	10.4	17 38.6	14 12.4	+ 6 49.6	−0.4072	0.5226	0.2046	+14	−68
pricorni	6.7	+3.97	+11.4	−17 53.7	20 18.5	−11 15.6	+1.1400	0.5181	+0.2123	+72	+23
pricorni	4.4	3.97	12.0	17 16.4	22 19.0	− 9 18.8	+0.8952	0.5159	0.2149	+73	+ 5
pricorni	5.6	3.96	14.4	14 30.5	**15** 8 12.3	+ 0 16.6	+0.0832	0.5095	0.2256	+42	−39
pricorni	6.1	3.97	14.6	14 52.3	8 58.9	+ 1 1.9	+0.6533	0.5090	0.2263	+75	− 9
pricorni	6.3	3.99	14.5	15 13.4	9 28.0	+ 1 30.2	+1.1444	0.5089	0.2268	+75	+22
pricorni	5.2	+4.01	+15.8	−14 2.2	14 18.2	+ 6 11.8	+0.9654	0.5059	+0.2314	+74	+ 9

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
c^1 Aquarii	6.8	+4.00	+18.0	−11 19.6	**15** 23 29.5	− 8 52.7	+0.1729	0.5008	+0.2386	+50	−34
c^2 Aquarii	5.6	4.02	17.7	12 4.3	23 32.2	− 8 50.1	+0.9972	0.5006	0.2388	+78	+11
B. A. C. 7740	7.0	4.02	18.0	11 34.4	**16** 0 26.1	− 7 57.6	+0.6680	0.5001	0.2394	+78	− 8
B. A. C. 7774	6.7	3.99	19.0	9 33.2	2 55.7	− 5 32.3	−0.9401	0.4989	0.2411	− 9	−90
67 Aquarii	6.4	4.02	21.5	7 30.0	17 21.1	+ 8 29.1	+0.3442	0.4930	0.2490	+61	−26
B. A. C. 7986	5.9	+4.04	+22.7	− 5 32.1	**17** 0 0.4	− 9 2.6	−0.1486	0.4907	+0.2514	+35	−52
B. A. C. 7993	6.6	4.04	22.8	5 21.6	1 11.1	− 7 53.8	−0.0458	0.4906	0.2519	+40	−46
B. A. C. 8017	6.1	4.05	23.1	5 15.9	3 33.4	− 5 35.3	+0.4478	0.4899	0.2525	+69	−21
B. A. C. 8094	5.4	4.08	24.2	4 3.3	11 28.1	+ 2 6.6	+1.1200	0.4896	0.2542	+86	+18
11 Piscium	6.4	4.10	25.2	2 21.4	19 19.8	+ 9 45.7	+1.2490	0.4873	0.2550	+88	+29
12 Piscium	6.8	+4.09	+25.3	− 1 36.1	19 21.8	+ 9 47.6	+0.4237	0.4873	+0.2550	+68	−22
13 Piscium	6.4	4.10	25.5	1 39.2	20 45.1	+11 8.7	+0.8347	0.4873	0.2551	+88	+ 0
14 Piscium	5.9	4.11	25.5	− 1 48.9	21 59.3	−11 39.1	+1.3290	0.4872	0.2551	+88	+37
15 Piscium	6.6	4.08	25.5	+ 0 44.7	22 45.4	−10 54.3	−1.3070	0.4870	0.2552	−37	−89
λ Piscium	4.5	4.08	26.4	1 12.9	**18** 2 29.8	− 7 15.8	−0.8742	0.4870	0.2549	− 3	−89
21 Piscium	5.8	+4.11	+26.7	+ 0 30.3	6 41.9	− 3 10.4	+0.9822	0.4870	+0.2546	+90	+ 9
22 Piscium	5.0	4.10	27.1	2 21.5	8 7.4	− 1 47.1	−0.7071	0.4870	0.2545	+ 7	−87
25 Piscium	6.4	4.11	27.0	1 31.1	8 45.5	+ 1 10.2	+0.3860	0.4871	0.2543	+66	−24
45 Piscium	6.9	4.17	28.5	7 7.5	**19** 3 14.6	− 7 10.5	−1.1750	0.4885	0.2491	−23	−83
51 Piscium	5.8	4.19	28.6	6 23.4	7 1.0	− 3 30.1	+0.5777	0.4897	0.2474	+80	−13
η Piscium	3.7	+4.35	+28.9	+14 49.1	**20** 15 32.9	+ 4 8.2	−1.0760	0.5006	+0.2242	−17	−75
101 Piscium	6.3	4.37	28.7	14 8.3	17 51.6	+ 6 22.9	+0.1946	0.5017	0.2219	+55	−28
104 Piscium	7.5	4.38	28.6	13 46.0	19 43.3	+ 8 11.4	+1.0140	0.5027	0.2199	+90	+15
105 Piscium	6.3	4.39	28.6	15 53.2	19 55.7	+ 8 23.5	−1.2940	0.5027	0.2198	−38	74
4 Arietis	5.7	4.41	28.4	16 26.8	**21** 0 26.4	−11 13.4	−0.9361	0.5047	0.2148	− 8	−74
B. A. C. 549	8.2	+4.41	+28.5	+16 30.6	0 31.9	−11 8.1	−0.9863	0.5052	+0.2147	−11	−73
ι Arietis	5.7	4.44	28.1	17 19.1	5 15.5	− 6 32.7	−0.8816	0.5070	0.2091	− 5	−73
15 Arietis	5.7	4.49	27.6	19 1.1	12 8.4	+ 0 8.1	−1.3610	0.5109	0.2006	−56	−71
B. A. C. 686	7.2	4.50	27.5	19 8.1	13 48.6	+ 1 45.3	−1.1580	0.5119	0.1984	−25	−71
θ Arietis	5.7	4.51	27.3	19 25.7	15 59.8	+ 3 52.7	−1.0540	0.5130	0.1954	−17	−71
23 Arietis	7.5	+4.51	+27.1	+19 13.2	16 31.3	+ 4 23.2	−0.7204	0.5136	+0.1946	+ 4	−71
26 Arietis	6.0	4.54	26.6	19 24.0	22 21.2	+10 2.7	+0.1906	0.5166	0.1862	+54	−24
μ Arietis	6.0	4.57	25.9	19 34.5	**22** 4 14.2	− 8 15.1	+1.0670	0.5199	0.1772	+90	+27
B. A. C. 920	7.0	4.62	24.8	21 12.6	12 21.8	− 0 22.6	+0.6375	0.5248	0.1637	+90	+ 2
ε Arietis	4.6	4.61	24.8	20 55.9	12 32.0	− 0 12.7	+0.9757	0.5250	0.1635	+90	+22
64 Arietis	5.7	+4.72	+22.6	+24 21.7	**23** 0 34.5	+11 26.8	−0.9868	0.5319	+0.1415	−15	−66
7 Tauri	6.0	4.72	21.9	24 7.3	5 22.7	− 7 54.3	−0.0645	0.5346	0.1319	+40	−30
11 Tauri	6.7	4.75	21.0	25 0.0	8 19.9	− 5 2.9	−0.6551	0.5371	0.1262	+ 7	−63
g Pleiadum	6.3	4.72	20.9	23 28.0	10 13.9	− 3 12.6	+0.7235	0.5373	0.1221	+90	+11
17 Tauri	4.3	4.72	20.9	23 47.5	10 16.1	− 3 10.5	+0.9223	0.5373	0.1221	+90	+24
18 Tauri	6.3	+4.74	+20.8	+24 31.1	10 23.4	− 3 3.5	+0.1344	0.5375	+0.1217	+51	−19
19 Tauri	5.0	4.73	20.9	24 8.7	10 25.0	− 3 1.9	+0.5487	0.5375	0.1217	+81	+ 2
20 Tauri	5.0	4.73	20.9	24 2.8	10 42.4	− 2 45.0	+0.6940	0.5376	0.1210	+90	+10
21 Tauri	7.0	4.73	20.9	24 14.1	10 44.5	− 2 43.0	+0.4897	0.5376	0.1210	+76	− 1
22 Tauri	7.0	4.73	20.9	24 12.5	10 48.5	− 2 39.2	+0.5265	0.5378	0.1208	+79	+ 1
23 Tauri	4.7	+4.73	+20.9	+23 37.8	10 56.8	− 2 31.2	+1.1840	0.5378	+0.1206	+90	+44
24 Tauri	8.0	4.72	20.8	23 47.9	11 25.3	− 2 3.6	+1.0503	0.5379	0.1196	+90	+33
η Tauri	3.1	4.72	20.8	23 47.3	11 29.0	− 2 0.0	+1.0710	0.5381	0.1195	+90	+34
B. A. C. 1171	7.8	4.72	20.8	24 1.8	11 57.1	− 1 32.8	+0.8614	0.5384	0.1185	+90	+20
27 Tauri	4.0	4.72	20.7	23 44.4	12 15.8	− 1 14.8	+1.2180	0.5384	0.1185	+90	+48
28 Tauri	6.2	+4.72	+20.7	+23 49.4	12 16.4	− 1 14.2	+1.1270	0.5384	+0.1185	+90	+39
B. A. C. 1192	6.0	4.75	20.3	25 16.2	12 46.0	− 0 45.6	−0.4121	0.5386	0.1166	+20	−48
p Tauri	6.0	4.80	18.4	26 12.9	22 10.7	+ 8 20.2	−0.4536	0.5436	0.0961	+18	−48
ψ Tauri	5.3	4.82	17.3	27 6.4	**24** 2 28.8	−11 30.4	−1.0400	0.5453	0.0864	−21	−63
χ Tauri	5.7	4.77	17.4	25 23.3	3 31.1	−10 30.2	+0.9391	0.5459	0.0840	+90	+29
W. iv, 1421	6.0	+4.81	+12.2	+27 54.2	**25** 0 23.7	+ 9 38.9	−0.5926	0.5539	+0.0330	+ 9	−52

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
β **Tauri**	1.8	+4.80	+10.1	+28 31.4	**25** 7 36.8	− 7 23.3	−1.0980	0.5552	+0.0145	−27	−62
136 **Tauri**	5.3	4.70	7.5	27 35.3	19 21.4	+ 3 56.1	−0.0833	0.5571	−0.0158	+38	−20
37 **Geminorum**	6.3	4.38	1.2	25 30.3	**26** 22 10.3	+ 5 47.3	+0.8037	0.5567	0.0850	+90	+21
39 **Geminorum**	6.3	4.39	0.7	26 13.0	23 40.2	+ 7 14.0	−0.0894	0.5563	0.0889	+38	−27
40 **Geminorum**	6.3	4.39	+ 0.6	26 3.3	23 57.6	+ 7 30.8	+0.0572	0.5563	0.0896	+47	−19
W. vi, 1656	8.2	+4.40	− 0.2	+26 59.3	**27** 1 49.7	+ 9 18.8	−1.1140	0.5556	−0.0936	−27	−63
49 **Geminorum**	7.2	4.32	0.9	25 55.2	5 45.9	−10 53.4	−0.3602	0.5552	0.1040	+23	−43
B. A. C. 2363	7.3	4.28	0.7	24 53.3	6 29.4	−10 11.4	+0.6668	0.5550	0.1057	+90	+10
52 **Geminorum**	6.3	4.29	0.8	25 3.8	6 35.8	−10 5.2	+0.4688	0.5549	0.1060	+75	0
A **Geminorum**	5.7	4.22	1.7	25 14.9	10 25.7	− 6 23.5	−0.1545	0.5540	0.1153	+35	−33
k **Geminorum**	3.7	+4.10	− 3.8	+24 38.7	19 38.2	+ 2 29.4	−0.6710	0.5516	−0.1371	+ 6	−64
82 **Geminorum**	6.3	4.04	3.7	23 23.8	21 28.3	+ 4 15.7	+0.3979	0.5512	0.1411	+68	− 7
84 **Geminorum**	6.8	3.99	4.4	22 36.0	23 27.3	+ 6 10.6	+0.9594	0.5507	0.1457	+90	+24
7 **Cancri**	6.3	3.92	4.9	22 21.6	**28** 4 15.6	+10 48.8	+0.4846	0.5494	0.1563	+75	− 4
μ^1 **Cancri**	6.3	3.92	5.3	22 55.8	5 20.6	+11 51.6	−0.2888	0.5489	0.1587	+27	−44
B. A. C. 2703	7.5	+3.91	− 5.3	+22 45.3	5 28.1	+11 58.8	−0.1250	0.5487	−0.1590	+26	−36
μ^2 **Cancri**	5.7	3.89	5.2	21 52.9	6 0.6	−11 29.8	+0.7129	0.5486	0.1602	+90	+ 8
B. A. C. 2788	6.0	3.80	6.1	21 4.4	11 38.6	− 6 3.6	+0.6263	0.5469	0.1721	+88	+ 1
η **Cancri**	5.4	3.71	7.2	20 47.6	17 12.5	− 0 41.2	−0.0699	0.5455	0.1832	+40	−36
35 **Cancri**	6.3	3.67	7.1	19 56.7	18 24.1	+ 0 28.0	+0.5992	0.5450	0.1858	+84	− 2
B. A. C. 2899	7.2	+3.64	− 7.3	+19 37.7	19 30.9	+ 1 32.5	+0.7230	0.5445	−0.1879	+90	+ 4
B. A. C. 2907	8.8	3.64	7.5	19 57.3	20 8.0	+ 2 8.3	+0.2654	0.5443	0.1891	+59	− 9
38 **Cancri**	7.0	3.64	7.6	20 8.6	20 22.9	+ 2 22.7	+0.0192	0.5443	0.1895	+44	−32
B. A. C. 2914	7.2	3.64	7.6	19 54.3	20 26.8	+ 2 26.5	+0.2530	0.5443	0.1897	+59	−20
39 **Cancri**	7.0	3.64	7.7	20 22.4	20 33.4	+ 2 32.9	−0.2548	0.5442	0.1899	+30	−46
40 **Cancri**	7.3	+3.64	− 7.8	+20 20.2	20 35.7	+ 2 35.1	−0.2235	0.5442	−0.1899	+31	−44
B. A. C. 2919	7.3	3.64	7.6	20 2.1	20 40.8	+ 2 40.0	+0.0768	0.5442	0.1901	+48	−29
ε **Cancri**	7.2	3.63	7.6	19 54.6	20 43.1	+ 2 42.2	+0.2006	0.5442	0.1902	+55	−22
e **Cancri**	7.1	3.64	7.7	20 5.2	20 50.4	+ 2 49.2	−0.0087	0.5442	0.1904	+43	−33
B. A. C. 2925	7.7	3.62	7.7	19 56.8	20 56.3	+ 2 54.9	+0.1204	0.5442	0.1907	+50	−27
B. A. C. 2931	7.5	+3.63	− 7.8	+20 14.6	21 20.4	+ 3 18.2	−0.2704	0.5442	−0.1914	+29	−47
δ **Cancri**	4.0	3.57	7.7	18 32.1	22 39.5	+ 4 34.6	+1.2680	0.5437	0.1938	+90	+44
68 **Cancri**	7.5	3.44	8.6	17 29.1	**29** 6 26.3	−11 54.4	+0.7927	0.5414	0.2081	+90	+ 8
71 **Cancri**	8.0	3.42	9.1	17 48.1	8 16.8	−10 7.6	+0.0762	0.5411	0.2112	+48	31
B. A. C. 3103	7.5	3.42	9.0	17 31.7	8 30.7	− 9 54.2	+0.3118	0.5408	0.2116	+62	−19
78 **Cancri**	7.8	+3.41	− 9.4	+17 53.2	9 46.9	− 8 40.6	−0.3306	0.5404	−0.2137	+26	−53
80 **Cancri**	6.8	3.40	9.8	18 28.0	11 6.7	− 7 23.5	−1.2190	0.5400	0.2160	−31	−72
7 **Leonis**	6.1	3.16	10.2	14 50.4	22 12.9	+ 3 20.4	+0.0378	0.5374	0.2334	+46	−36
11 **Leonis**	6.8	3.14	10.7	14 48.8	23 12.8	+ 4 18.3	−0.1682	0.5371	0.2347	+34	−47
ψ **Leonis**	6.0	3.11	11.0	14 29.6	**30** 1 51.8	+ 6 52.0	−0.4643	0.5368	0.2385	+19	−64
21 **Leonis**	6.8	+3.05	−11.2	+12 19.5	5 11.6	+10 5.3	+0.9592	0.5363	−0.2431	+90	+13
23 **Leonis**	6.3	3.05	11.2	13 32.9	5 16.6	+10 10.1	−0.3163	0.5363	0.2431	+27	−56
ν **Leonis**	5.3	3.00	11.5	12 56.2	8 38.5	−10 34.7	−0.5135	0.5358	0.2474	+17	−68
A **Leonis**	4.7	2.89	11.5	10 30.2	13 11.8	− 6 10.4	+0.8320	0.5353	0.2530	+90	+ 4
α **Leonis**	1.3	2.92	12.1	12 28.3	13 24.4	− 5 58.2	−1.2290	0.5352	0.2531	−30	−78
44 **Leonis**	6.0	+2.79	−12.2	+ 9 18.6	21 20.1	+ 1 41.8	−0.0491	0.5348	−0.2615	+41	−44
45 **Leonis**	6.0	2.79	12.7	10 17.3	22 27.2	+ 2 46.7	−1.3350	0.5346	0.2626	−40	−80
48 **Leonis**	5.5	2.70	12.2	7 29.1	**31** 1 50.1	+ 6 3.0	+0.6145	0.5346	0.2657	+83	10
49 **Leonis**	6.0	2.73	12.8	9 11.1	1 55.9	+ 6 8.6	−1.1320	0.5348	0.2659	−20	−81
37 **Sextantis**	6.3	2.65	12.6	6 55.1	7 8.1	+11 10.6	−0.2334	0.5348	0.2701	+31	−55
38 **Sextantis**	7.8	+2.64	−12.6	+ 6 53.5	7 42.6	+11 44.0	+0.3616	0.5348	−0.2704	+25	−62
56 **Leonis**	6.6	2.59	13.1	6 44.2	11 47.5	− 8 19.2	−1.3140	0.5355	0.2734	−36	−83
d **Leonis**	5.3	2.54	12.7	4 10.3	13 55.5	− 6 15.4	+0.6836	0.5355	0.2746	+89	− 8
75 **Leonis**	5.7	2.45	13.2	2 34.7	21 44.5	+ 1 18.2	+0.1151	0.5369	0.2786	+49	−37
76 **Leonis**	6.3	+2.43	−13.1	+ 2 13.0	22 30.2	+ 2 2.3	+0.2651	0.5370	−0.2789	+58	−29

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	$N.$	$S.$
		Δα	Δδ								
		s	"	° ′	d h m	h m				°	°
79 Leonis	6–0	+2.41	−13.3	+ 1 58.5	**1** 0 53.1	+ 4 20.4	−0.1565	0.5375	−0.2798	+35	−52
υ Leonis	4.4	2.33	13.1	− 0 15.2	6 52.2	+10 7.6	+0.3851	0.5394	0.2813	+65	−24
χ Virginis	5.2	2.04	13.9	7 24.6	**2** 11 2.5	−10 39.7	−0.4036	0.5521	0.2750	+21	−67
28 Virginis	7.0	2.05	14.1	6 55.9	12 14.1	− 9 30.6	−1.2170	0.5527	0.2740	−27	−90
ψ Virginis	5.2	2.00	14.0	8 58.7	17 38.8	− 4 17.3	−0.6761	0.5560	0.2700	+ 7	−89
g Virginis	5.9	+1.98	−14.2	−10 11.3	23 29.2	+ 1 20.6	−1.0480	0.5598	−0.2643	−17	−90
i Virginis	5.7	1.94	14.2	12 10.2	**3** 7 28.4	+ 9 2.2	−1.1800	0.5657	0.2550	−28	−90
75 Virginis	6.0	1.93	14.0	14 49.9	10 1.6	+11 29.7	+0.7800	0.5674	0.2515	+70	− 2
83 Virginis	6.0	1.93	14.2	15 39.6	14 50.6	− 7 52.1	+0.3964	0.5710	0.2443	+59	−23
				NEW	*MOON.*						
b Scorpii	5.3	+2.16	−13.5	−25 26.3	**5** 15 49.2	− 8 51.2	+0.5360	0.6036	−0.1288	+55	−14
A^2 Scorpii	5.2	2.17	13.5	25 1.2	16 18.1	− 7 54.8	+0.0033	0.6036	0.1257	+25	−43
B. A. C. 5253	5.8	2.17	13.4	24 13.6	16 55.1	− 7 48.1	−0.7934	0.6036	0.1254	−17	−90
B. A. C. 5255	6.0	2.18	13.4	25 6.3	17 1.2	− 7 42.3	+0.0592	0.6037	0.1252	+28	−40
3 Scorpii	6.7	+2.17	−13.4	−24 56.3	17 11.3	− 7 32.6	−0.1266	0.6039	−0.1247	+18	−51
4 Scorpii	6.3	2.18	13.5	25 57.8	17 29.1	− 7 15.5	+0.8450	0.6039	0.1238	+64	+ 5
π Scorpii	3.4	2.19	13.4	25 49.1	18 43.2	− 6 4.6	+0.5525	0.6040	0.1199	+55	−12
B. A. C. 5314	5.7	2.21	13.2	25 34.7	20 22.8	− 4 29.4	+0.1234	0.6046	0.1148	+30	−36
B. A. C. 5347	6.0	2.24	13.0	26 3.0	22 7.3	− 2 49.0	+0.3934	0.6050	0.1091	+45	−21
σ Scorpii	3.4	+2.27	−12.7	−25 20.8	**6** 2 55.4	+ 1 46.6	−0.7889	0.6064	−0.0939	−20	−90
α Scorpii	1.2	2.32	12.5	26 12.3	5 54.7	+ 4 38.3	−0.2049	0.6070	0.0841	+10	−56
B. A. C. 5800	7.5	2.54	10.8	26 51.8	22 15.6	− 3 42.9	−0.4866	0.6060	0.0298	− 9	−76
A Ophiuchi	4.9	2.51	11.6	26 27.2	22 41.9	− 3 17.8	−0.9101	0.6059	0.0283	−33	−90
B. A. C. 5813	6.8	2.51	11.5	26 24.0	23 1.1	− 2 59.3	−0.9736	0.6057	0.0272	−37	−90
38 Ophiuchi	6.7	+2.55	−10.5	−26 31.1	23 31.1	− 2 30.6	−0.8674	0.6056	−0.0255	−31	−90
43 Ophiuchi	5.8	2.61	10.5	28 2.7	**7** 1 34.9	− 0 32.0	+0.6162	0.6053	−0.0187	+53	− 8
3 Sagittarii	4 6	2.73	9.2	27 47.7	10 30.9	+ 8 1.2	+0.3324	0.6019	+0.0107	+33	−24
B. A. C. 6127	5.1	2.85	8.1	28 28.2	18 10.3	− 8 38.6	+1.1950	0.5974	0.0354	+62	−38
B. A. C. 6194	5.1	2.86	7.1	27 4.9	21 58.0	− 5 0.3	−0.0541	0.5947	0.0472	+15	−47
φ Sagittarii	3.7	+3.02	− 5.2	−27 6.0	**8** 8 35.0	+ 5 10.7	+0.6389	0.5869	+0.0789	+58	− 7
σ Sagittarii	2.3	3.06	4.4	26 25.6	12 22.2	+ 8 48.9	+0.2699	0.5806	0.0897	+36	−28
ψ Sagittarii	5.4	3.14	2.6	25 26.2	20 29.3	− 7 23.0	+0.0721	0.5757	0.1115	+28	−39
χ^1 Sagittarii	5.4	3.18	1.6	24 42.7	**9** 0 28.1	− 3 33.2	−0.2136	0.5722	0.1214	+14	−56
χ^2 Sagittarii	6.3	3.17	1.6	24 37.1	0 30.8	− 3 30.7	−0.3049	0.5720	0.1216	+10	−62
χ^3 Sagittarii	5.6	+3.16	− 1.4	−24 10.1	0 34.3	− 3 27.3	−0.7647	0.5718	+0.1216	−15	−90
h^1 Sagittarii	5-7	3.23	0.8	24 56.8	4 54.7	+ 0 43.3	+0.5944	0.5679	0.1323	+59	−10
h^2 Sagittarii	4.7	3.26	0.8	25 6.8	5 11.3	+ 0 59.3	+0.8035	0.5675	0.1329	+65	+ 2
53 Sagittarii	6.7	3.22	− 0.1	23 39.9	6 31.3	+ 2 16.3	−0.5172	0.5661	0.1361	0	−78
B. A. C. 6727	6.2	3.23	0.0	23 40.0	6 38.8	+ 2 23.5	−0.4999	0.5658	0.1363	+ 1	−76
4 Capricorni	6.1	+3.38	+ 3.5	−22 7.9	23 2.1	− 5 48.5	+0.4217	0.5493	+0.1708	+53	−20
19 Capricorni	6.1	3.48	7.9	18 18.9	**10** 15 58.4	+10 33.5	−0.4688	0.5325	0.1988	+10	−73
20 Capricorni	6.3	3.52	8.1	19 26.2	18 14.0	−11 15.3	+1.1760	0.5306	0.2021	+71	+27
21 Capricorni	6.4	3.49	8.7	17 56.1	18 51.6	−10 38.9	−0.2925	0.5299	0.2030	+20	−60
θ Capricorni	4.1	3.50	9.1	17 38.7	21 17.8	− 8 17.4	−0.1030	0.5276	0.2063	+30	−49
29 Capricorni	5.7	+3.50	+10.7	−15 36.0	**11** 2 5.4	− 3 38.9	−1.2810	0.5234	+0.2123	−42	−90
ι Capricorni	4.4	3.57	10.6	17 16.4	5 15.9	− 0 34.3	+1.1880	0.5206	0.2162	+73	+28
42 Capricorni	5.6	3.59	13.0	14 30.5	15 0.2	+ 8 52.2	+0.3819	0.5128	0.2263	+59	−23
44 Capricorni	6.1	3.61	13.3	14 52.3	15 46.2	+ 9 36.8	+0.9456	0.5123	0.2272	+75	+ 8
μ Capricorni	5.2	3.66	14.3	14 2.3	21 1.3	− 9 17.2	+1.2560	0.5087	0.2318	+76	+33
e^1 Aquarii	6.8	+3.67	+16.5	−11 19.6	**12** 6 6.6	− 0 28.1	+0.4663	0.5025	+0.2385	+67	−19
e^2 Aquarii	5.6	3.69	16.2	12 4.3	6 9.2	− 0 25.6	+1.2830	0.5025	0.2388	+78	+34
B. A. C. 7740	7.0	3.69	16.5	11 34.4	7 2.6	+ 0 26.4	+0.9563	0.5020	0.2392	+78	+ 8
B. A. C. 7774	6.7	3.66	17.5	9 33.2	9 30.8	+ 2 50.3	−0.6443	0.5006	0.2407	+ 8	−86
67 Aquarii	6.4	3.73	20.1	7 30.1	23 49.8	− 7 14.8	+0.6230	0.4940	0.2480	+80	−11
B. A. C. 7986	5.9	+3.76	+21.5	− 5 32.2	**13** 6 26.9	− 0 48.6	+0.1242	0.4914	+0.2501	+49	−37

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N	S.
		s	"	° '	d h m	h m				°	°
B. A. C. 7993	6.6	+3.77	+21.6	− 5 21.7	13 7 37.3	+ 0 19.9	+0.2266	0.4909	+0.2506	+55	32
B. A. C. 8017	6.1	3.79	21.9	5 15.9	9 58.9	+ 2 37.6	+0.7112	0.4901	0.2512	+84	6
B. A. C. 8094	5.4	3.84	23.0	4 3.3	17 52.0	+10 17.8	+1.3710	0.4882	0.2525	+86	+43
12 Piscium	6.8	3.88	24.3	1 36.1	14 1 44.5	− 6 2.2	+0.6633	0.4868	0.2530	+87	9
13 Piscium	6.4	3.89	24.5	− 1 39.2	3 7.8	− 4 41.1	+1.0740	0.4867	0.2530	+88	+15
15 Piscium	6.6	+3.86	+25.4	+ 0 44.7	5 7.9	− 2 44.3	−1.0640	0.4865	+0.2530	−15	89
λ Piscium	4.5	3.88	25.8	1 12.9	8 52.0	+ 0 54.0	−0.6403	0.4861	0.2528	10	85
21 Piscium	5.8	3.93	25.9	0 30.3	13 4.0	+ 4 59.2	+1.2050	0.4862	0.2524	+90	+25
22 Piscium	5.0	3.93	26.5	2 21.5	14 29.5	+ 6 22.5	−0.4846	0.4862	0.2521	+18	72
25 Piscium	6.4	3.94	26.3	1 31.1	15 7.5	+ 6 59.4	+0.6043	0.4862	0.2519	+82	10
45 Piscium	6.9	+4.07	+28.1	+ 7 7.5	15 9 36.3	+ 0 58.7	−0.9904	0.4879	+0.2465	10	83
51 Piscium	5.8	4.10	28.4	6 23.3	13 22.8	+ 4 39.1	+0.7525	0.4885	0.2447	+90	3
75 Piscium	6.0	4.30	30.0	12 24.4	16 8 22.1	− 0 52.5	−1.3810	0.4952	0.2333	50	78
η Piscium	3.7	4.42	29.9	14 49.1	21 53.7	−11 43.5	−0.9815	0.5007	0.2217	11	75
101 Piscium	6.3	4.44	29.7	14 8.3	17 0 12.2	− 9 29.0	+0.2815	0.5018	0.2195	+59	24
104 Piscium	7.5	+4.46	+29.5	+13 46.0	2 3.8	− 7 40.6	+1.1000	0.5028	+0.2176	+90	+23
105 Piscium	6.3	4.48	29.9	15 53.2	2 16.0	− 7 28.7	−1.2120	0.5030	0.2174	29	74
4 Arietis	5.7	4.53	29.7	16 26.8	6 46.2	− 3 6.2	−0.8646	0.5054	0.2125	− 4	74
B. A. C. 549	8.2	4.53	29.7	16 30.6	6 51.7	− 3 0.9	−0.9145	0.5054	0.2123	− 7	73
ι Arietis	5.7	4.58	29.5	17 19.1	11 34.7	+ 1 33.9	−0.8235	0.5078	0.2069	− 2	73
15 Arietis	5.7	+4.68	+29.2	+19 1.1	18 26.2	+ 8 13.3	−1.3180	0.5119	+0.1985	−45	71
B. A. C. 686	7.2	4.70	29.0	19 8.1	20 6.1	+ 9 50.3	−1.1200	0.5129	0.1963	23	71
θ Arietis	5.7	4.71	28.9	19 25.7	22 16.8	+11 57.2	−1.0210	0.5142	0.1932	−15	71
23 Arietis	7.5	4.71	28.7	19 23.2	22 48.2	−11 32.5	−0.6879	0.5147	0.1927	+ 6	71
26 Arietis	6.0	4.77	28.2	19 24.1	18 4 36.7	− 5 54.3	+0.2051	0.5181	0.1842	+55	23
μ Arietis	6.0	+4.85	+27.4	+19 34.6	10 27.9	− 0 13.9	+1.0620	0.5219	+0.1754	+90	+27
B. A. C. 920	7.0	4.95	26.4	21 12.6	18 33.0	+ 7 36.1	+0.6179	0.5270	0.1619	+87	+ 1
ε Arietis	4.6	4.94	26.4	20 55.9	18 43.1	+ 7 45.9	+0.9535	0.5271	0.1615	+90	+21
64 Arietis	5.7	5.13	24.6	24 21.7	19 6 41.0	− 4 39.2	−1.0350	0.5344	0.1397	19	66
7 Tauri	6.0	5.15	23.7	24 7.3	11 27.1	− 0 2.4	−0.1232	0.5374	0.1302	+36	33
11 Tauri	6.7	+5.22	+23.0	+25 0.0	14 23.1	+ 2 47.8	0.7221	0.5393	+0.1243	+ 2	65
g Pleiadum	6.3	5.20	22.6	23 28.1	16 16.3	+ 4 37.3	+0.6485	0.5404	0.1203	+90	+ 8
17 Tauri	4.3	5.19	22.6	23 47.6	16 18.5	+ 4 39.4	+0.8450	0.5404	0.1203	+90	+19
18 Tauri	6.3	5.21	22.6	24 31.2	16 25.7	+ 4 46.3	+0.0593	0.5406	0.1199	+47	22
19 Tauri	5.0	5.20	22.5	24 8.8	16 27.4	+ 4 48.0	+0.4741	0.5406	0.1199	+74	2
20 Tauri	5.0	+5.20	+22.5	+24 2.9	16 44.6	+ 5 4.7	+0.6173	0.5408	+0.1194	+90	+ 6
21 Tauri	7.0	5.20	22.5	24 14.2	16 46.7	+ 5 6.7	+0.4133	0.5408	0.1194	+70	4
22 Tauri	7.0	5.21	22.5	24 12.6	16 50.6	+ 5 10.4	+0.4519	0.5408	0.1192	+73	2
23 Tauri	4.7	5.19	22.5	23 37.9	16 58.9	+ 5 18.4	+1.1060	0.5408	0.1189	+90	+37
24 Tauri	8.0	5.20	22.3	23 48.0	17 27.2	+ 5 45.8	+0.9752	0.5411	0.1180	+90	+28
η Tauri	3.1	+5.20	+22.3	+23 47.4	17 30.8	+ 5 49.3	+0.9936	0.5413	+0.1177	+90	+29
B. A. C. 1171	7.8	5.21	22.2	24 1.9	17 58.7	+ 6 16.3	+0.7805	0.5416	0.1170	+90	+16
27 Tauri	4.0	5.20	22.2	23 44.5	18 17.3	+ 6 34.2	+1.1360	0.5416	0.1159	+90	+40
28 Tauri	6.2	5.20	22.2	23 49.5	18 17.9	+ 6 34.8	+1.0450	0.5416	0.1159	+90	+33
B. A. C. 1192	6.0	5.25	22.0	25 16.3	18 47.3	+ 7 3.2	0.4920	0.5420	0.1149	+16	52
f Tauri	6.0	+5.33	+22.0	+26 12.9	20 4 7.7	− 7 56.3	1.5478	0.5467	+0.0944	+12	54
φ Tauri	5.3	5.38	19.0	27 6.4	8 23.7	− 3 48.1	1.1480	0.5491	0.0846	−31	63
χ Tauri	5.7	5.41	18.8	25 23.3	9 25.5	− 2 48.5	+0.8252	0.5495	0.0822	+90	+24
W. iv, 1421	6.0	5.45	12.1	27 54.2	21 6 8.9	− 6 48.5	0.7463	0.5577	0.0311	0	62
β Tauri	1.8	5.48	10.9	28 31.4	13 19.3	+ 0 6.6	1.2650	0.5591	+0.0127	54	61
136 Tauri	5.3	+5.43	+ 7.6	+27 35.3	22 1 0.1	+11 22.2	−0.2714	0.5604	0.0177	+28	30
ε Geminorum	3.2	5.28	+ 1.3	25 14.0	22 50.5	+ 8 25.5	+1.2600	0.5560	0.0744	+90	+58
37 Geminorum	6.3	5.25	− 0.1	25 30.3	23 3 40.0	−10 40.6	+0.5685	0.5551	0.0608	+84	+ 8
39 Geminorum	6.3	5.27	0.7	26 13.0	5 16.0	− 9 22.8	0.3260	0.5575	0.0005	+25	40
40 Geminorum	6.3	5.27	0.9	26 3.3	5 33.3	− 9 6.1	0.1825	0.5575	0.0012	+33	32
48 Geminorum	6.0	+5.16	− 2.1	+24 18.1	11 14.6	− 3 37.0	+1.1410	0.5559	0.1052	+90	+42

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
49 Geminorum	7.2	+5.23	− 2.6	+25 55.3	23 11 22.5	− 3 29.3	−0.6116	0.5559	−0.1055	+ 9	−59
B. A. C. 2363	7.3	5.17	2.5	24 53.4	12 6.2	− 2 47.2	+0.4184	0.5558	0.1073	+70	− 3
52 Geminorum	6.3	5.18	2.6	25 3.9	12 12.6	− 2 41.0	+0.2181	0.5556	0.1076	+56	−13
A Geminorum	5.7	5.16	3.9	25 14.9	16 3.4	+ 1 1.6	−0.4107	0.5546	0.1168	+20	−47
κ Geminorum	3.7	+5.03	− 6.3	+24 38.7	24 1 19.3	+ 9 57.9	−0.9445	0.5507	−0.1380	−12	−65
82 Geminorum	6.3	4.96	6.5	23 23.8	3 10.2	+11 45.0	+0.1279	0.5504	0.1422	+51	−21
84 Geminorum	6.8	4.91	6.8	22 36.0	5 10.3	−10 19.1	+0.6892	0.5499	0.1465	+90	+ 8
7 Cancri	6.3	4.85	8.0	22 21.6	10 1.4	− 5 38.1	+0.2073	0.5476	0.1570	+55	−19
μ^1 Cancri	6.3	+4.86	− 8.4	+22 55.8	11 7.1	− 4 34.6	−0.5723	0.5474	−0.1592	+12	−61
B. A. C. 2703	7.5	4.85	8.4	25 45.3	11 14.9	− 4 27.1	−0.4075	0.5473	0.1596	+21	−51
μ^3 Cancri	5.7	4.82	8.4	21 52.9	11 47.5	− 3 55.5	+0.4340	0.5473	0.1607	+71	− 7
B. A. C. 2788	6.0	4.73	9.6	21 4.3	17 29.6	+ 1 34.8	+0.3445	0.5448	0.1723	+64	−14
35 Cancri	6.3	+4.61	−10.9	+19 56.6	25 0 20.8	+ 8 12.1	+0.3118	0.5420	−0.1854	+62	−17
B. A. C. 2899	7.2	4.57	11.1	19 37.6	1 28.7	+ 9 17.6	+0.4348	0.5414	0.1875	+70	−11
B. A. C. 2907	8.8	4.58	11.4	19 57.2	2 6.3	+ 9 53.9	−0.0228	0.5414	0.1887	+42	−34
38 Cancri	7.0	4.57	11.5	20 8.5	2 21.5	+10 8.7	−0.2746	0.5413	0.1891	+28	−47
B. A. C. 2914	7.2	+4.57	−11.4	+19 54.2	2 25.5	+10 12.5	−0.0458	0.5412	−0.1892	+41	−35
39 Cancri	7.0	4.58	11.6	20 22.3	2 32.2	+10 19.0	−0.5527	0.5412	0.1894	+13	−63
40 Cancri	7.3	4.58	11.6	20 20.1	2 34.5	+10 21.2	−0.5210	0.5412	0.1895	+15	−61
B. A. C. 2919	7.3	4.57	11.5	20 2.0	2 39.7	+10 26.2	−0.2182	0.5409	0.1897	+31	−44
ε Cancri	7.2	+4.56	−11.5	+19 54.5	2 42.1	+10 28.5	−0.0950	0.5409	−0.1897	+38	−38
e Cancri	7.1	4.57	11.5	20 5.1	2 49.5	+10 35.7	−0.3045	0.5409	0.1899	+27	−49
B. A. C. 2925	7.7	4.56	11.5	19 56.7	2 55.5	+10 41.5	−0.1760	0.5409	0.1902	+34	−42
B. A. C. 2931	7.5	4.56	11.7	20 14.5	3 20.0	+11 5.1	−0.5665	0.5409	0.1909	+12	−64
44 Cancri	8.3	+4.50	−11.3	+18 31.2	3 57.6	+11 41.6	+1.1310	0.5405	−0.1921	+90	+31
δ Cancri	4.0	4.49	11.7	18 32.0	4 40.4	−11 37.1	+0.9795	0.5401	0.1932	+90	+20
68 Cancri	7.5	4.36	12.9	17 29.1	12 35.7	− 3 57.6	+0.4957	0.5371	0.2068	+74	−10
71 Cancri	8.0	4.35	13.4	17 48.1	14 28.5	− 2 8.5	−0.2293	0.5364	0.2099	+31	−47
B. A. C. 3103	7.5	+4.34	−13.4	+17 31.7	14 42.7	− 1 54.8	+0.0070	0.5363	−0.2104	+44	−35
78 Cancri	7.8	4.33	13.8	17 53.2	16 0.5	− 0 39.6	−0.6419	0.5359	0.2123	+ 9	−71
7 Leonis	6.1	4.07	15.3	14 50.3	26 4 43.7	+11 38.8	−0.2713	0.5315	0.2309	+29	−52
11 Leonis	6.8	4.05	15.6	14 48.7	5 45.1	−11 21.9	−0.4796	0.5313	0.2321	+18	−65
ψ Leonis	6.0	+4.02	−15.8	+14 29.5	8 28.3	− 8 43.9	−0.7825	0.5306	−0.2357	+ 2	−69
18 Leonis	6.0	3.94	15.4	12 17.0	9 46.0	− 7 28.7	+1.2090	0.5299	0.2372	+90	+31
21 Leonis	6.8	3.95	16.2	12 19.4	11 53.4	− 5 25.3	+0.6601	0.5295	0.2400	+88	− 5
23 Leonis	6.3	3.95	16.3	13 32.8	11 58.5	− 5 20.6	−0.6306	0.5295	0.2400	+10	−74
ν Leonis	5.3	+3.89	−16.6	+12 56.1	15 26.1	− 1 59.5	−0.8337	0.5285	−0.2441	− 1	−77
A Leonis	4.7	3.78	16.6	10 30.1	20 7.4	+ 2 32.8	+0.5332	0.5277	0.2490	+76	−13
44 Leonis	6.0	3.66	17.2	9 18.5	27 4 30.8	+10 40.1	−0.3574	0.5264	0.2570	+25	−61
48 Leonis	5.5	3.57	17.5	7 29.0	9 9.5	− 8 50.0	+0.3188	0.5261	0.2607	+61	−25
35^1 Sextantis	6.2	+3.49	−17.4	+ 5 23.2	13 18.3	− 4 49.0	+1.3850	0.5261	−0.2638	+90	+48
37 Sextantis	6.3	3.50	18.0	6 55.0	14 38.0	− 3 31.9	−0.5368	0.5260	0.2648	+15	−75
38 Sextantis	7.8	3.49	18.0	6 53.4	15 13.7	− 2 57.3	−0.6682	0.5261	0.2651	+ 9	−83
d Leonis	5.3	3.38	17.9	4 10.2	21 39.6	+ 3 16.4	+0.3987	0.5262	0.2688	+66	−22
ρ^3 Leonis	6.2	+3.30	−17.7	+ 2 30.9	28 0 45.6	+ 6 16.5	+1.2520	0.5266	−0.2704	+90	−30
75 Leonis	5.7	3.27	18.4	2 34.6	5 45.2	+11 6.6	−0.1663	0.5271	0.2726	+35	−52
76 Leonis	6.3	3.25	18.3	2 12.9	6 32.6	+11 52.5	−0.0153	0.5274	0.2727	+43	−44
79 Leonis	6.0	3.22	18.4	+ 1 58.4	9 0.7	− 9 44.1	−0.4423	0.5281	0.2733	+21	−69
υ Leonis	4.4	+3.12	−18.1	− 0 15.3	15 12.8	− 3 43.9	+0.1216	0.5293	−0.2745	+50	−37
χ Virginis	5.2	2.77	17.9	7 25.7	29 20 23.8	+ 0 29.5	−0.6205	0.5426	0.2679	+ 9	−83
ψ Virginis	5.2	2.71	17.8	8 58.8	30 3 13.5	+ 7 5.4	−0.8802	0.5469	0.2631	− 6	−90
g Virginis	5.9	2.66	17.6	10 11.4	9 15.2	−11 5.4	−1.2440	0.5509	0.2576	−33	−90
i Virginis	5.7	+2.59	−17.3	−12 10.3	17 28.9	− 3 9.1	−1.3530	0.5572	−0.2486	−49	−90
75 Virginis	6.0	+2.58	−16.7	−14 50.0	20 6.5	− 0 37.2	+0.6439	0.5594	−0.2453	+74	− 9

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
83 Virginis	6.0	+2.55	−16.5	−15 39.7	1 1 3.4	+ 4 8.9	+0.2678	0.5631	−0.2383	+51	−29
85 Virginis	6.5	2.55	16.6	15 15.0	1 31.4	+ 4 35.9	−0.2513	0.5639	0.2377	+24	−58
B. A. C. 4722	5.8	2.50	15.9	17 43.2	13 52.8	− 7 30.4	−0.6183	0.5740	0.2168	+ 3	−85
B. A. C. 4923	7.3	2.54	16.4	20 56.9	2 6 32.2	+ 8 30.0	−0.7525	0.5879	0.1809	− 9	−90
42 Libræ	5.7	2.47	13.6	23 29.0	22 53.0	+ 0 10.8	−0.8620	0.6001	0.1374	−20	−90
B. A. C. 5197	6.0	+2.49	−13.3	−24 23.6	3 0 56.5	+ 2 9.2	−0.2390	0.6010	−0.1314	+13	−58
				NEW	*MOON.*						
B. A. C. 6194	5.1	2.83	5.9	27 4.7	5 8 38.0	+ 7 27.9	+0.0890	0.6016	+0.0497	+23	−38
φ Sagittarii	3.7	2.93	3.9	27 6.0	19 13.2	− 6 32.9	+0.8056	0.5916	0.0821	+63	+ 4
σ Sagittarii	2.3	+2.94	− 3.5	−26 25.6	22 45.7	− 2 59.4	+0.4484	0.5912	+0.0929	+47	−18
ψ Sagittarii	5.4	2.98	1.9	25 26.1	6 6 42.2	+ 4 38.0	+0.2669	0.5837	0.1149	+38	−28
χ^1 Sagittarii	5.4	3.01	1.1	24 42.6	10 35.6	+ 8 22.3	−0.0068	0.5806	0.1251	+25	−44
χ^2 Sagittarii	6.3	3.00	1.0	24 37.0	10 38.2	+ 8 24.7	−0.0971	0.5805	0.1252	+20	−48
χ^3 Sagittarii	5.6	2.99	0.9	24 10.0	10 41.7	+ 8 28.2	−0.5489	0.5805	0.1253	− 3	−81
h^1 Sagittarii	5.7	+3.05	− 0.3	−24 56.8	14 55.9	−11 27.5	+0.8032	0.5759	+0.1360	+65	+ 3
h^2 Sagittarii	4.7	3.05	− 0.2	25 6.8	15 12.1	−11 11.9	+1.0120	0.5759	0.1366	+65	+17
53 Sagittarii	6.7	3.03	+ 0.3	23 39.9	16 30.2	− 9 56.8	−0.2925	0.5748	0.1397	+11	−61
B. A. C. 6727	6.2	3.03	0.3	23 40.0	16 37.4	− 9 49.9	−0.2775	0.5745	0.1402	+13	−60
Venus				23 25.5	20 35.6	− 6 0.7	+0.0515	0.5192	0.1407	+31	−40
4 Capricorni	6.1	+3.13	+ 3.5	−22 7.8	7 8 36.1	+ 5 33.5	+0.6671	0.5577	+0.1748	+67	− 6
19 Capricorni	6.1	3.17	7.3	18 18.9	8 1 6.4	− 2 30.5	−0.1833	0.5403	0.2027	+25	−54
21 Capricorni	6.4	3.19	8.0	17 56.1	3 55.2	+ 0 12.6	−0.0053	0.5380	0.2069	+35	−44
θ Capricorni	4.1	3.21	8.5	17 38.7	6 17.7	+ 2 30.4	+0.1841	0.5353	0.2102	+45	−33
29 Capricorni	5.7	3.21	9.8	15 36.1	10 58.1	+ 7 1.7	−0.9725	0.5311	0.2163	−16	−90
42 Capricorni	5.6	+3.28	+11.8	−14 30.5	23 34.2	− 4 46.0	+0.6823	0.5196	+0.2299	+75	− 7
44 Capricorni	6.1	3.30	12.1	14 52.3	9 0 19.1	− 4 2.6	+1.2420	0.5193	0.2305	+75	+34
50 Capricorni	6.9	3.26	13.0	12 10.3	2 9.9	− 2 15.2	−1.2050	0.5177	0.2322	−31	−90
e^1 Aquarii	6.8	3.36	15.1	11 19.7	14 20.5	+ 9 33.6	+0.7794	0.5082	0.2415	+73	− 2
B. A. C. 7740	7.0	3.38	15.1	11 34.5	15 15.4	+10 26.9	+1.2650	0.5077	0.2419	+78	+33
B. A. C. 7774	6.7	+3.35	+16.0	− 9 33.2	17 40.5	−11 12.3	−0.3189	0.5063	+0.2436	+24	−61
ρ Aquarii	5.6	3.34	16.7	8 20.3	19 25.6	− 9 30.2	−1.1980	0.5049	0.2446	−28	−90
67 Aquarii	6.4	3.43	18.5	7 30.1	10 7 43.5	+ 2 26.7	+0.9419	0.4979	0.2500	+82	+ 7
B. A. C. 7986	5.9	3.47	19.8	5 32.2	14 14.1	+ 8 46.3	+0.4471	0.4952	0.2519	+68	−20
B. A. C. 7993	6.6	3.47	20.0	5 21.7	15 23.4	+ 9 53.7	+0.5470	0.4946	0.2520	+77	−15
B. A. C. 8017	6.1	+3.49	+20.2	− 5 16.0	17 42.9	−11 50.6	+1.0300	0.4937	+0.2525	+85	+13
12 Piscium	6.8	3.60	22.7	1 36.1	11 9 16.1	+ 3 17.0	+0.9761	0.4891	0.2534	+88	+ 9
13 Piscium	6.4	3.60	22.8	− 1 39.2	10 38.4	+ 4 37.1	+1.3810	0.4888	0.2533	+88	+45
15 Piscium	6.6	3.59	23.9	+ 0 44.7	12 37.3	+ 6 32.8	−0.7435	0.4887	0.2532	+ 5	−84
λ Piscium	4.5	3.62	24.2	1 12.9	16 19.1	+10 8.7	−0.3256	0.4879	0.2528	+27	−62
22 Piscium	5.0	+3.67	+25.1	+ 2 21.5	21 53.5	− 8 25.9	−0.1741	0.4875	+0.2518	+34	−52
25 Piscium	6.4	3.69	24.8	1 31.1	22 31.2	− 7 49.3	+0.9074	0.4873	0.2517	+90	+ 5
45 Piscium	6.9	3.85	27.4	7 7.4	12 16 52.9	+10 3.0	−0.7015	0.4871	0.2452	+ 7	−83
51 Piscium	5.8	3.89	27.2	6 23.3	20 38.3	−10 17.7	+1.0300	0.4889	0.2436	+90	+15
75 Piscium	6.0	4.10	29.3	12 24.4	13 15 34.3	+ 8 7.3	−1.1310	0.4941	0.2313	−21	−78
η Piscium	3.7	+4.29	+29.7	+14 49.1	14 5 4.9	− 2 44.7	−0.7577	0.4997	+0.2194	+ 3	−73
101 Piscium	6.3	4.33	29.6	14 8.3	7 23.1	− 0 30.4	+0.4990	0.5008	0.2172	+74	−12
103 Piscium	6.8	4.36	30.1	16 6.4	9 13.5	+ 1 16.9	−1.2860	0.5016	0.2153	−37	−74
104 Piscium	7.5	4.35	29.4	13 46.0	9 14.7	+ 1 18.0	+1.3120	0.5016	0.2153	+90	+44
105 Piscium	6.3	4.37	30.0	15 53.2	9 26.9	+ 1 29.9	−0.9922	0.5017	0.2149	−12	−74
3 Arietis	6.0	+4.42	+30.1	+16 54.0	13 6.2	+ 5 3.0	−1.3400	0.5037	+0.2110	−45	−73
4 Arietis	5.7	4.43	29.9	16 26.8	13 57.0	+ 5 52.3	−0.6560	0.5042	0.2101	+ 8	−73
B. A. C. 549	8.2	4.43	29.9	16 30.6	14 2.4	+ 5 57.5	−0.7078	0.5042	0.2101	+ 5	−74
ι Arietis	5.7	4.50	29.8	17 19.1	18 45.3	+10 32.2	−0.6263	0.5069	0.2045	+10	−70
15 Arietis	5.7	4.62	29.7	19 1.1	15 1 36.6	− 6 48.6	−1.1370	0.5107	0.1961	−24	−71
B. A. C. 686	7.2	+4.64	+29.6	+19 8.1	3 16.4	− 5 11.8	−0.9417	0.5118	+0.1938	−10	−71

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Red'ns from 1896.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
		s	"	° '	d h m	h m				°	°
θ Arietis	5.7	+4.67	+29.4	+19 25.7	**15** 5 27.1	− 3 4.9	−0.8472	0.5133	+0.1908	− 4	−71
23 Arietis	7.3	4.68	29.1	19 13.2	5 58.4	− 2 34.6	−0.5168	0.5136	0.1901	+15	−62
26 Arietis	6.0	4.76	28.8	19 24.1	11 46.6	+ 3 3.1	+0.3615	0.5171	0.1819	+65	−15
ν Arietis	5.7	4.87	28.6	21 31.2	15 50.2	+ 6 59.3	−1.1550	0.5198	0.1756	−38	−68
μ Arietis	6.0	4.86	28.0	19 34.6	17 37.5	+ 8 43.3	+1.2070	0.5211	0.1729	+90	−40
B. A. C. 920	7.0	+5.00	+27.1	+21 12.7	**16** 1 41.7	− 7 27.6	+0.7399	0.5265	+0.1596	+90	+ 9
ε Arietis	4.6	5.00	27.1	20 56.0	1 51.7	− 7 18.0	+1.0750	0.5267	0.1594	+90	+30
64 Arietis	5.7	5.24	25.7	24 21.7	13 47.7	+ 4 15.1	−0.9328	0.5346	0.1375	−11	−66
7 Tauri	6.0	5.29	24.7	24 7.3	18 32.9	+ 8 50.9	−0.0367	0.5379	0.1281	+41	−28
11 Tauri	6.7	5.38	24.2	25 0.0	21 28.1	+11 40.3	−0.6377	0.5399	0.1223	+ 8	−62
g **Pleiadum**	6.3	+5.37	+23.6	+23 58.1	23 20.9	−10 30.6	+0.7218	0.5409	+0.1181	+90	+11
17 Tauri	4.3	5.36	23.6	23 47.6	23 23.0	−10 28.6	+0.9198	0.5412	0.1181	+90	+24
18 Tauri	6.3	5.39	23.6	24 31.2	23 29.9	−10 21.9	+0.1338	0.5412	0.1180	+51	−19
19 Tauri	5.0	5.38	23.5	24 8.8	23 31.9	−10 19.9	+0.5496	0.5414	0.1180	+81	+ 3
20 Tauri	5.0	5.38	23.4	24 2.9	23 49.0	−10 3.4	+0.6905	0.5414	0.1172	+90	+10
21 Tauri	7.0	+5.38	+23.4	+24 14.2	23 51.1	−10 1.4	+0.4872	0.5414	+0.1172	+76	0
22 Tauri	7.0	5.38	23.4	24 12.6	23 55.0	− 9 57.7	+0.5238	0.5416	0.1170	+79	+ 1
23 Tauri	4.7	5.39	23.4	23 37.9	**17** 0 3.3	− 9 49.6	+1.1760	0.5416	0.1169	+90	+44
24 Tauri	8.0	5.38	23.3	23 48.0	0 31.4	− 9 22.4	+1.0450	0.5419	0.1157	+90	+33
η Tauri	3.1	5.38	23.3	23 47.4	0 35.0	− 9 18.9	+1.0620	0.5419	0.1155	+90	+34
B. A. C. 1171	7.8	+5.40	+23.2	+24 1.9	1 2.7	− 8 52.1	+0.8496	0.5420	+0.1147	+90	+22
27 Tauri	4.0	5.39	23.1	23 44.5	1 21.3	− 8 34.2	+1.2050	0.5423	0.1140	+90	+47
28 Tauri	6.2	5.39	23.1	23 49.5	1 21.9	− 8 33.6	+1.1140	0.5423	0.1140	+90	+39
B. A. C. 1192	6.0	5.43	23.2	25 16.3	1 51.1	− 8 5.4	−0.4210	0.5424	0.1129	+20	−48
p Tauri	6.0	5.58	21.2	26 13.0	11 8.3	+ 0 52.9	−0.5003	0.5483	0.0924	+15	−51
φ Tauri	5.3	+5.66	+20.2	+27 6.4	15 22.8	+ 4 58.6	−1.1040	0.5505	+0.0826	−27	−63
χ Tauri	5.7	5.62	19.8	25 23.3	16 24.1	+ 5 57.8	+0.8606	0.5511	0.0802	+90	+24
W. iv, 1421	6.0	5.92	14.2	27 54.2	**18** 12 57.2	+ 1 47.3	−0.7536	0.5603	+0.0292	− 1	−62
136 Tauri	5.3	6.01	8.2	27 35.3	**19** 7 35.9	− 4 14.5	−0.3222	0.5644	−0.0202	+25	−34
ε Geminorum	3.2	5.95	+ 0.8	25 14.0	**20** 5 9.7	− 7 27.9	+1.1560	0.5639	0.0772	+90	+46
37 Geminorum	6.3	+5.94	− 0.9	+25 30.3	10 1.2	− 2 47.0	+0.4583	0.5627	−0.0897	+74	+ 1
39 Geminorum	6.3	5.97	1.4	26 13.0	11 30.0	− 1 21.4	−0.4385	0.5626	0.0934	+18	−47
40 Geminorum	6.3	5.97	1.5	26 3.3	11 47.1	− 1 4.9	−0.2923	0.5611	0.0941	+27	−38
49 Geminorum	7.2	5.96	3.6	25 55.2	17 31.7	+ 4 27.4	−0.6226	0.5604	0.1085	+ 8	−64
B. A. C. 2363	7.3	5.91	3.7	24 53.3	18 14.8	+ 5 8.9	+0.4001	0.5603	0.1103	+69	− 5
52 Geminorum	6.3	+5.91	− 3.8	+25 3.8	18 21.1	+ 5 15.0	+0.2028	0.5603	−0.1106	+56	−14
κ Geminorum	3.7	5.82	8.0	24 38.7	**21** 7 17.5	− 6 14.4	−1.0810	0.5560	0.1413	−23	−65
82 Geminorum	6.3	5.75	8.4	23 23.8	9 7.1	− 4 30.6	−0.0248	0.5552	0.1452	+42	−29
84 Geminorum	6.8	5.67	8.9	22 35.9	11 5.8	− 2 36.1	+0.5304	0.5546	0.1497	+78	− 1
7 Cancri	6.3	5.67	10.3	22 21.5	15 53.3	+ 2 1.3	+0.0424	0.5526	0.1601	+46	−27
μ^1 Cancri	6.3	+5.66	−10.7	+22 55.7	16 58.2	+ 3 3.0	−0.7357	0.5522	−0.1623	+ 2	−67
B. A. C. 2703	7.5	5.66	10.8	22 45.2	17 5.9	+ 3 11.4	−0.5716	0.5521	0.1625	+12	−61
μ^2 Cancri	5.7	5.63	10.9	21 52.8	17 38.2	+ 3 42.6	+0.2663	0.5520	0.1637	+59	−16
B. A. C. 2788	6.0	5.56	12.4	21 4.3	23 16.4	+ 9 9.0	+0.1637	0.5493	0.1753	+53	−23
η Cancri	5.4	5.50	13.9	20 47.5	**22** 4 51.7	− 9 27.2	−0.5498	0.5466	0.1860	+14	−62
35 Cancri	6.3	+5.46	−14.0	+19 56.6	6 3.6	− 8 17.7	+0.1194	0.5461	−0.1882	+50	−26
B. A. C. 2899	7.2	5.41	14.4	19 37.6	7 10.9	− 7 12.7	+0.2404	0.5455	0.1904	+57	−20
B. A. C. 2907	8.8	5.43	14.6	19 57.2	7 48.2	− 6 36.7	−0.2211	0.5450	0.1914	+42	−44
38 Cancri	7.0	5.43	14.7	20 8.5	8 3.2	− 6 22.2	−0.4685	0.5449	0.1920	+18	−58
B. A. C. 2914	7.2	5.42	14.7	19 54.2	8 7.1	− 6 18.5	−0.2298	0.5449	0.1922	+31	−45
39 Cancri	7.0	+5.43	−14.8	+20 22.3	8 13.8	− 6 11.9	−0.7439	0.5449	−0.1923	+ 2	−69
40 Cancri	7.3	5.43	14.8	20 20.1	8 16.2	− 6 9.6	−0.7124	0.5449	0.1923	+ 4	−70
B. A. C. 2919	7.3	5.42	14.8	20 2.0	8 21.1	− 6 4.9	−0.4123	0.5449	0.1925	+21	−55
ε Cancri	7.2	5.41	14.8	19 54.5	8 23.6	− 6 2.5	−0.2877	0.5448	0.1927	+28	−48
e Cancri	7.1	5.42	14.8	20 5.1	8 30.9	− 5 55.5	−0.4983	0.5448	0.1928	+16	−60
B. A. C. 2925	7.7	+5.41	−14.9	+19 56.7	8 36.9	− 5 49.7	−0.3701	0.5446	−0.1930	+23	−52

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's						At Conjunction in R. A.								Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. Δα	Δδ	Apparent Declination.		Washington Mean Time.			Hour Angle H		Y	x′	y′	N.	S.
		s	″	°	′	d	h	m	h	m				°	°
B. A. C. 2931	7.5	+5.42	-15.0	+20	14.5	22	9	1.2	-5	26.2	-0.7593	0.5445	-0.1937	+2	-67
44 Cancri	8.3	5.35	14.8	18	31.2		9	38.4	-4	50.2	+0.9268	0.5444	0.1948	+90	+17
δ Cancri	4.0	5.34	15.1	18	32.0		10	20.9	-4	9.2	+0.7784	0.5441	0.1962	+90	+7
68 Cancri	7.5	5.24	16.7	17	29.0		18	12.6	+3	26.7	+0.2849	0.5403	0.2094	+60	-21
71 Cancri	8.0	5.25	17.3	17	48.0		20	4.6	+5	15.0	-0.4403	0.5395	0.2124	+19	-60
B. A. C. 3103	7.5	+5.22	-17.3	+17	31.6		20	18.7	+5	28.6	-0.2044	0.5394	-0.2128	+32	-46
78 Cancri	7.8	5.23	17.7	17	53.1		21	36.1	+6	43.3	-0.8555	0.5387	0.2148	-4	-72
7 Leonis	6.1	4.96	19.9	14	50.3	23	10	16.1	-5	1.5	-0.5042	0.5333	0.2327	+17	66
11 Leonis	6.8	4.95	20.2	14	48.7		11	17.4	-4	2.2	-0.7144	0.5328	0.2340	+5	75
ψ Leonis	6.0	4.92	20.7	14	29.5		14	0.3	-1	24.6	-1.0200	0.5318	0.2373	-13	-76
18 Leonis	6.0	+4.85	-20.3	+12	16.9		15	18.0	-0	9.4	+0.9736	0.5315	-0.2389	+90	+14
19 Leonis	7.0	4.83	20.3	12	2.6		15	48.2	+0	19.4	+1.1000	0.5309	0.2395	+90	+22
B. A. C. 3345	8.0	4.83	20.3	11	54.3		15	51.8	+0	23.3	+1.2300	0.5308	0.2395	+90	+33
21 Leonis	6.8	4.86	21.0	12	19.3		17	25.3	+1	53.9	+0.4215	0.5307	0.2413	+68	18
23 Leonis	6.3	4.86	21.1	13	32.7		17	30.6	+1	59.0	0.8724	0.5307	0.2414	-4	76
ν Leonis	5.3	+4.81	-21.6	+12	56.0		20	58.0	+5	19.7	-1.0770	0.5294	-0.2451	17	77
A Leonis	4.7	4.69	21.9	10	30.0	24	1	40.0	+9	52.8	+0.2872	0.5277	0.2500	+9	26
44 Leonis	6.0	4.58	22.9	9	18.4		10	5.5	-5	57.7	-0.6124	0.5259	0.2573	+.2	77
48 Leonis	5.5	4.48	23.0	7	28.9		14	46.0	-1	26.1	+0.0637	0.5250	0.2607	+47	-38
35¹ Sextantis	6.2	4.41	23.0	5	17.1		18	56.9	+2	37.0	+1.2340	0.5242	0.2635	+90	+29
37 Sextantis	6.3	+4.42	-23.7	+6	54.9		20	17.5	+3	55.0	-0.8011	0.5241	-0.2642	+1	-71
38 Sextantis	7.8	4.41	23.7	6	53.3		20	53.5	+4	29.9	0.9317	0.5241	0.2647	-6	-83
d Leonis	5.3	4.30	23.8	4	10.1	25	3	23.6	+10	47.8	+0.1390	0.5237	0.2679	+51	35
ρ² Leonis	6.2	4.22	23.7	2	30.8		6	32.0	10	9.7	+0.9991	0.5236	0.2690	+90	+10
75 Leonis	5.7	4.19	24.3	2	34.5		11	36.0	-5	15.3	-0.4346	0.5236	0.2705	+21	68
76 Leonis	6.3	+4.17	-24.2	+2	12.8		12	24.1	-4	28.7	-0.2771	0.5236	-0.2706	+29	-58
79 Leonis	6.0	4.14	24.4	+1	58.3		14	54.7	-2	2.8	-0.7092	0.5238	0.2712	+6	-88
ν Leonis	4.4	4.05	24.1	-0	15.4		21	13.4	+4	4.1	-0.1381	0.5246	0.2719	+36	-51
q Virginis	5.7	3.70	23.0	8	53.1	27	0	31.9	+6	30.3	+1.2900	0.5350	0.2656	+81	+34
χ Virginis	5.2	3.68	23.4	7	25.8		3	6.4	+8	59.7	-0.8742	0.5359	0.2631	-5	90
ψ Virginis	5.2	+3.61	23.1	-8	58.9		10	8.1	8	12.4	-1.1280	0.5383	-0.2580	22	-90
75 Virginis	6.0	3.46	21.2	14	50.1	28	3	33.2	+8	37.2	+0.4457	0.5494	0.2398	+63	20
83 Virginis	6.0	3.44	20.8	15	39.8		8	40.0	-10	26.8	+0.0722	0.5534	0.2328	+41	-39
85 Virginis	6.5	3.43	20.9	15	15.1		9	8.9	-9	58.9	-0.4535	0.5538	0.2321	+16	-71
B. A. C. 4722	5.8	3.35	19.7	17	43.2		21	55.6	+2	20.2	0.8061	0.5637	0.2113	-8	-90
B. A. C. 4923	7.3	+3.22	-19.2	20	57.0	29	15	8.5	-5	5.8	0.9069	0.5780	-0.1760	-18	-90
42 Libræ	5.7	3.23	15.2	23	29.0	30	8	0.2	+11	5.9	-0.9833	0.5903	0.1332	-28	-90
B. A. C. 5197	6.0	3.24	14.7	24	23.6		10	7.4	-10	52.0	-0.3460	0.5917	0.1274	+8	65
b Scorpii	5.3	3.24	14.2	25	26.3		12	4.8	-8	59.4	+0.4581	0.5928	0.1219	+50	18
A¹ Scorpii	5.2	3.23	14.2	25	1.2		13	5.6	-8	1.2	-0.0819	0.5934	0.1189	+20	48
B. A. C. 5253	5.8	+3.22	-14.4	24	13.6		13	12.9	-7	54.1	-0.8928	0.5936	-0.1185	-23	90
B. A. C. 5255	6.0	3.23	14.1	25	6.3		13	19.2	-7	48.1	-0.0234	0.5636	0.1182	+23	44
3 Scorpii	6.7	3.23	14.2	24	56.3		13	29.7	-7	38.0	0.2123	0.5936	0.1179	+14	56
4 Scorpii	6.3	3.24	13.9	25	57.8		13	48.0	-7	20.4	+0.7791	0.5939	0.1169	+64	+1
π Scorpii	3.4	3.24	13.8	25	49.1		15	4.6	-6	7.0	+0.4882	0.5946	0.1132	+51	-16
B. A. C. 5314	5.7	+3.23	13.6	25	34.7		16	47.3	-4	28.5	+0.0569	0.5967	-0.1081	+26	-40
B. A. C. 5347	6.0	3.24	13.2	26	3.0		18	35.0	-2	45.2	+0.3412	0.5968	0.1028	+41	24
σ Scorpii	3.4	3.21	12.8	25	20.8		23	31.0	+1	58.5	0.8366	0.5991	0.0880	+23	90
α Scorpii	1.2	3.22	12.2	26	12.3	31	2	34.8	+4	54.7	0.2293	0.6002	0.0785	+9	57
B. A. C. 5800	7.5	+3.19	9.5	-26	51.8		19	12.4	-3	9.7	0.4311	0.6039	-0.0250	-6	-72

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1896.

Date.	The Star's		IMMERSION.				EMERSION.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Jan. 2	80 Cancri	6.8	4 10	10 1	91	146	4 55	11 5	311	4	1 4
3	α Leonis	1.3	5 34	10 41	101	154	6 37	11 44	313	3	1 3
4	56 Leonis *	6.6	3 32	8 35	50	98	3 55	8 58	358	47	1 23
6	χ Virginis*	5.2	5 12	10 7	192	243	5 24	10 19	221	272	0 12
7	83 Virginis	6.0	12 30	17 20	173	188	13 24	18 14	259	263	0 54
19	21 Piscium *	5.8	6 6	10 10	9	318	6 40	10 44	297	247	0 34
23	B. A. C. 920 *	7.0	11 4	14 52	94	46	11 52	15 39	225	190	0 47
24	7 Tauri	6.0	1 57	5 41	16	63	1 52	6 37	291	316	0 56
24	18 Tauri	6.3	8 15	11 59	95	37	9 18	13 2	253	198	1 3
26	136 Tauri ‡	5.3	12 44	16 20	93	44	13 34	17 9	284	240	0 49
28	κ Geminorum	3.7	6 11	9 40	156	204	7 1	10 29	234	259	0 49
30	ν Leonis	5.3	14 40	17 59	80	27	15 21	18 40	341	288	0 41
31	49 Leonis	6.0	4 6	7 23	87	138	4 55	8 12	322	14	0 49
31	38 Sextantis	7.8	11 41	14 57	106	86	12 47	16 2	333	297	1 5
Feb. 15	14 Piscium *	5.9	5 45	8 2	86	35	6 36	8 54	220	170	0 52
19	26 Arietis	6.0	7 7	9 8	50	354	8 8	10 10	179	125	1 2
21	*p* Tauri	6.0	4 58	6 52	33	355	6 2	7 56	302	247	1 4
22	W. iv, 1421	6.0	5 33	7 23	109	81	6 55	8 45	246	188	1 22
24	A Geminorum	5.7	12 58	14 6	175	118	13 23	14 30	226	171	0 24
25	η Cancri *	5.4	15 55	17 32	151	105	16 31	18 8	251	208	0 36
26	80 Cancri	6.8	5 26	7 1	86	36	6 30	8 4	320	266	1 3
27	α Leonis	1.3	5 19	6 49	82	133	6 9	7 40	331	18	0 51
27	44 Leonis	6.0	15 37	17 5	151	99	16 23	17 52	270	219	0 47
28	75 Leonis	5.7	14 33	15 58	174	130	15 15	16 40	257	210	0 42
28	79 Leonis *	6.0	17 28	18 53	87	36	18 11	19 36	328	278	0 43
Mar. 4	4 Scorpii	6.3	11 41	12 47	91	134	12 42	13 48	317	352	1 1
9	17 Capricorni †	6.0	15 34	16 20	124	173	16 21	17 7	208	252	0 47
21	136 Tauri	5.3	10 5	10 5	156	95	10 42	10 42	226	167	0 37
22	39 Geminorum	6.3	12 51	12 46	137	83	13 38	13 33	257	206	0 47
22	40 Geminorum	6.3	13 23	13 18	174	122	13 43	13 38	219	169	0 20
23	κ Geminorum	3.7	5 31	5 24	149	203	6 31	6 23	240	280	0 59
25	23 Leonis	6.3	13 0	12 44	140	90	14 0	13 43	207	154	0 59
26	49 Leonis	6.0	5 53	5 33	87	138	6 47	6 28	331	20	0 55
26	37 Sextantis	6.3	13 13	12 53	138	98	14 17	13 56	295	248	1 3
26	38 Sextantis	7.8	13 47	13 26	104	60	14 44	14 24	327	278	0 58
April 1	τ Scorpii	3.2	14 26	13 41	137	160	15 46	15 2	257	266	1 21
5	B. A. C. 7049	6.5	15 29	14 29	42	90	16 27	15 27	293	335	0 58
7	MARS †		15 57	14 48	56	108	17 5	15 56	260	309	1 8
15	19 Tauri	5.0	10 19	8 40	122	72	11 4	9 25	228	181	0 45
15	18 Tauri	6.3	10 32	8 53	21	332	10 56	9 17	329	281	0 24
15	21 Tauri ‡	7.0	10 34	8 56	102	53	11 16	9 37	248	204	0 41
15	22 Tauri ‡	7.0	10 39	9 0	109	60	11 27	9 48	241	197	0 48
20	η Cancri	5.4	12 58	10 59	143	87	13 10	11 51	271	216	0 52
20	39 Geminorum *	6.3	16 3	14 4	57	12	16 31	14 32	345	302	0 28
20	40 Geminorum *	6.3	16 3	14 4	67	21	16 37	14 37	336	293	0 33
22	44 Leonis	6.0	15 25	13 17	118	66	16 20	14 12	302	251	0 55
23	75 Leonis	5.7	15 23	13 11	134	86	16 21	14 10	291	241	0 59
23	76 Leonis	6.3	16 24	14 13	154	104	17 10	14 59	265	214	0 46
28	4 Scorpii †	6.3	10 38	8 12	172	221	11 9	8 40	232	279	0 28
30	B. A. C. 6127	5.1	12 47	10 8	83	133	13 47	11 9	291	335	1 1
May 18	71 Cancri	8.0	10 56	7 7	179	135	11 37	7 49	247	197	0 42
19	ν Leonis	5.3	9 52	5 59	78	78	10 41	6 49	357	337	0 50
23	75 Virginis	6.0	14 36	10 27	173	157	15 25	11 16	254	228	0 49
June 7	μ Arietis *	6.0	18 53	13 44	73	118	19 44	14 35	241	284	0 51
13	7 Cancri *	6.3	15 21	9 49	113	66	16 8	10 36	285	244	0 47
28	μ Capricorni *	5.2	15 31	9 1	2	55	15 53	9 23	319	11	0 22
30	11 Piscium	6.4	19 58	13 18	73	118	21 12	14 33	213	248	1 15
30	13 Piscium	6.4	22 27	15 48	37	55	23 52	17 12	239	231	1 24
July 3	104 Piscium	7.5	20 22	13 31	84	137	21 21	14 29	215	268	0 58
4	26 Arietis	6.0	0 4	17 8	178	228	0 45	17 50	295	341	0 42

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.

* Whole occultation below the horizon of Washington. † Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1896.

Date.		The Star's		IMMERSION.				EMERSION.				Duration of Occultation.
				Washington.		Angle from		Washington.		Angle from		
		Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
				h m	h m	°	°	h m	h m	°	°	h m
July	11	B. A. C. 3103 *	7.5	1 8	17 45	170	213	1 28	18 4	218	264	0 19
	11	JUPITER		2 21	18 58	120	170	3 16	19 52	271	324	0 54
	25	44 Capricorni	6.1	22 22	14 4	179	168	23 12	14 53	286	264	0 49
	25	45 Capricorni	6.3	22 19	14 1	109	99	23 3	14 45	176	155	0 44
	28	21 Piscium *	5.8	17 7	8 38	45	96	18 2	9 33	260	311	0 55
Aug	2	g Pleiadum	6.5	20 35	11 46	118	167	21 11	12 22	203	255	0 36
	2	19 Tauri	5.0	20 31	11 52	80	129	21 35	12 46	239	293	0 54
	2	21 Tauri	7.0	21 0	12 11	73	124	21 56	13 6	225	280	0 55
	2	20 Tauri	5.0	21 0	12 11	118	169	21 37	12 48	201	255	0 37
	2	22 Tauri	7.0	21 3	12 14	81	132	21 58	13 8	237	292	0 54
	16	τ Scorpii	3.2	18 13	8 30	124	103	19 21	9 37	242	209	1 7
	21	31 Capricorni	6.7	16 45	6 41	55	101	17 56	7 53	263	294	1 12
	21	ι Capricorni	4.4	19 55	9 51	13	31	20 55	10 51	284	290	1 0
	22	c² Aquarii	5.6	20 32	10 24	49	71	21 57	11 50	237	238	1 26
	22	B. A. C. 7740	7.0	22 27	12 19	14	9	23 35	13 26	266	246	1 7
	23	B. A. C. 8017	6.1	2 3	15 50	57	16	3 13	17 0	212	165	1 10
	24	13 Piscium *	6.4	16 47	6 32	7	58	17 28	7 3	301	352	0 31
	24	14 Piscium †	5.9	17 31	7 16	110	161	18 12	7 57	192	242	0 41
	29	7 Tauri	6.0	2 34	15 58	61	95	4 6	17 29	253	228	1 31
Sept.	2	A Geminorum	5.7	4 6	17 13	107	166	5 24	18 32	271	324	1 19
	18	μ Capricorni	5.2	19 8	7 14	29	62	20 20	8 26	268	289	1 12
	20	12 Piscium	6.8	1 54	13 52	54	17	3 10	15 7	233	187	1 15
	24	26 Arietis	6.0	5 11	16 52	91	39	6 26	18 7	231	175	1 15
	29	39 Geminorum	6.3	4 16	15 38	89	148	5 40	17 2	285	330	1 24
	29	40 Geminorum	6.3	4 47	16 8	123	181	6 6	17 28	255	287	1 21
	30	82 Geminorum	6.3	1 29	12 48	172	225	1 44	13 2	201	255	0 14
Oct	15	44 Capricorni	6.1	22 37	8 57	55	41	23 57	10 17	230	200	1 20
	18	21 Piscium	5.8	18 34	4 43	54	105	19 38	5 46	243	290	1 3
	22	B. A. C. 920	7.0	1 39	11 31	133	170	2 6	11 58	169	187	0 27
	23	g Pleiadum	6.3	22 29	8 17	87	143	23 30	9 18	226	284	1 1
	23	19 Tauri	5.0	22 58	8 36	57	114	23 54	9 42	256	314	1 6
	23	20 Tauri	5.0	23 2	8 50	92	150	0 4	9 52	220	278	1 2
	23	21 Tauri	7.0	23 11	8 59	53	111	0 18	10 6	259	313	1 7
	23	22 Tauri	7.0	23 13	9 1	71	128	0 22	10 10	251	309	1 9
	28	B. A. C. 2788 †	6.0	0 33	10 1	138	183	1 13	10 42	241	290	0 41
	28	35 Cancri	6.3	9 1	18 28	164	147	10 0	19 27	255	214	0 59
	28	B. A. C. 2899	7.2	10 38	20 5	158	110	11 38	21 4	264	209	0 59
Nov.	9	h² Sagittarii	5.4	20 22	5 3	67	55	21 41	6 22	245	218	1 19
	9	h¹ Sagittarii	7.4	20 26	5 7	15	3	21 15	5 57	299	272	0 50
	12	B. A. C. 7740	7.0	21 57	6 27	99	102	22 53	7 23	183	171	0 56
	19	19 Tauri	5.0	9 24	17 24	98	44	10 22	18 22	254	204	0 58
	19	g Pleiadum	6.3	9 28	17 28	150	96	9 54	17 54	201	149	0 26
	19	21 Tauri	7.0	9 44	17 44	80	26	10 41	18 41	273	224	0 57
	19	20 Tauri	5.0	9 47	17 47	126	72	10 31	18 31	227	178	0 44
	19	22 Tauri	7.0	9 51	17 48	87	33	10 48	18 45	266	217	0 47
	19	B. A. C. 1171 ‡	7.8	11 3	19 3	146	98	11 30	19 30	207	163	0 27
	23	B. A. C. 2363	7.3	2 38	10 24	126	185	3 39	11 25	242	301	1 1
	23	52 Geminorum	6.3	2 39	10 24	85	144	3 51	11 36	284	343	1 12
	24	7 Cancri †	6.3	0 39	8 21	41	89	1 8	8 50	335	25	0 29
	24	μ² Cancri	5.7	2 16	9 58	129	183	3 11	10 53	251	306	0 55
	24	B. A. C. 2788	6.0	9 57	17 38	89	44	11 2	18 42	331	277	1 4
	25	68 Cancri	7.5	3 22	10 59	172	226	3 57	11 34	231	285	0 35
	25	B. A. C. 3103	7.5	5 26	13 3	68	122	6 21	13 58	338	29	0 55
	28	ν Leonis	4.4	5 48	13 13	99	150	6 43	14 8	321	11	0 55
Dec.	8	θ Capricorni	4.1	0 48	7 35	350	308	1 12	7 59	308	352	0 24
	14	101 Piscium	6.3	23 55	6 19	54	90	1 22	7 45	232	236	1 26
	15	26 Arietis	6.0	6 14	12 32	102	46	7 20	13 38	227	172	1 6
	20	37 Geminorum	6.3	2 29	8 28	131	190	4 24	9 24	233	292	0 56
	24	48 Leonis	5.5	7 29	13 12	75	120	8 17	14 0	355	33	0 48
	24	35 Sextantis	6.2	14 21	20 2	165	118	15 10	20 52	263	213	0 50

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.

* Whole occultation below the horizon of Washington. † Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

DOWNES'S TABLE GIVING VALUES OF *τ*.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

	Lat. 72°			Lat. 66°			Lat. 60			Lat. 54°			Lat. 48°			Lat. 42°			Lat. 36°		
h	*x'*			*x'*			*x'*			*x'*			*x'*			*x'*			*x'*		
	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	2	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	6	5	6	7
20	3	3	4	4	5	5	5	6	7	6	7	9	8	9	11	9	10	12	11	12	14
30	5	5	6	6	7	8	8	9	11	10	11	13	12	13	16	14	16	18	16	18	22
40	6	7	8	8	9	11	11	12	14	13	15	17	16	18	21	18	21	24	21	24	29
50	7	8	10	10	11	13	13	15	17	16	19	21	19	22	26	22	26	30	26	30	36
1 0	9	10	11	12	14	16	16	18	21	19	22	26	23	26	31	26	31	36	30	35	42
10	10	12	13	14	16	18	18	21	24	22	26	30	26	30	36	31	35	42	35	40	48
20	12	13	15	16	18	21	21	23	27	25	29	34	30	34	40	35	40	47	39	45	54
30	13	15	17	18	20	23	23	26	30	28	32	37	33	38	45	39	44	52	43	50	59
40	14	16	18	20	22	25	25	29	33	31	35	41	36	42	49	42	48	57	47	54	64
50	16	18	20	21	24	28	27	31	36	34	38	44	39	45	53	45	52	61	51	58	68
2 0	17	19	22	23	26	30	29	33	39	36	41	47	42	48	56	48	55	65	54	62	72
10	18	20	23	25	28	32	31	36	41	38	43	50	45	51	59	51	59	68	57	66	76
20	19	22	24	26	30	34	33	38	43	40	46	53	47	54	62	54	62	71	60	69	80
30	20	23	26	28	31	36	35	40	45	42	48	55	50	56	65	57	64	74	63	72	83
40	21	24	27	29	33	37	37	42	47	44	50	58	52	59	68	59	67	77	65	74	86
50	22	25	28	30	34	39	38	43	49	46	52	60	54	61	70	61	69	79	68	76	88
3 0	23	26	30	31	35	40	40	45	51	48	54	62	56	63	72	63	71	81	70	79	90
10	24	27	31	33	36	42	41	46	53	49	56	63	57	65	74	65	73	83	72	81	92
20	25	28	32	34	38	43	42	47	54	51	57	65	59	66	75	66	74	85	73	82	93
30	26	29	33	35	39	44	43	49	55	52	58	66	60	67	77	68	76	86	74	83	95
40	26	29	33	36	40	45	44	50	56	53	59	67	61	69	78	69	77	87	75	84	96
50	27	30	34	36	41	46	45	51	57	54	60	68	62	70	79	70	78	88	76	85	96
4 0	28	31	35	37	41	47	46	52	58	55	61	69	63	70	79	71	79	89	77	86	97
10	28	31	35	38	42	47	47	52	59	56	62	70	64	71	80	71	79	89	78	86	97
20	29	32	36	38	42	48	47	53	59	56	62	70	64	71	80	72	80	89	78	87	97
30	29	32	36	39	43	48	48	53	60	57	63	71	65	72	81	72	80	90	79	87	97
40	29	33	37	39	43	49	48	53	60	57	63	71	65	72	81	72	80	89	79	87	97
50	30	33	37	39	44	49	48	54	60	57	63	71	65	72	81	72	80	89	79	87	96
5 0	30	33	37	39	44	49	49	54	60	57	63	71	65	72	80	72	80	89	78	86	95
10	30	33	37	40	44	49	49	54	60	57	63	71	65	72	80	72	79	88	78	86	95
20	30	33	37	40	44	49	49	54	60	57	63	71	65	71	79	72	79	88	78	85	94
30	30	33	37	40	44	49	49	54	60	57	63	70	64	71	79	71	78	87	77	85	93
40	30	33	37	39	44	49	48	53	59	56	62	70	64	70	78	70	77	86	76	84	91
50	30	33	37	39	43	48	48	53	59	56	61	69	63	70	77	70	77	85	75	83	90
6 0	30	33	37	39	43	48	48	52	58	55	61	68	63	69	76	69	76	84	74	82	89
10	30	33	37	39	43	47	47	52	58	55	60	67	62	68	75	68	75	82	73	80	87
20	29	32	36	38	42	47	47	51	57	54	60	66	61	67	74	67	73	81	72	79	85
30	29	32	36	38	42	46	46	51	56	53	59	65	60	66	73	66	72	80	71	78	84
40	29	32	35	37	41	46	45	50	55	53	58	64	59	65	71	65	71	78	70	76	82
50	28	31	35	37	40	45	45	49	54	52	57	62	58	63	70	63	69	76	68	74	80
7 0	28	31	34	36	40	44	44	48	53	51	55	61	57	62	68	62	68	75	67	73	78
10	27	30	34	35	39	43	43	47	52	50	54	60	56	61	67	61	66	73	65	71	76
20	27	30	33	35	38	42	42	46	51	48	53	58	54	59	65	59	65	71	64	68	74
30	26	29	32	34	37	41	41	45	49	47	52	57	53	58	63	58	63	69	62	67	71
40	26	28	31	33	36	40	40	44	48	46	50	55	51	56	62	56	61	67			
50	25	27	31	32	35	39	39	42	47	45	49	53	50	54	60	54	59	65			
8 0	24	27	30	31	34	38	38	41	45	43	47	52	48	52	58	53	57	63			
10	24	26	29	30	33	37	36	40	44	42	46	50	47	51	56	52	55	60			
20	23	25	28	29	32	35	35	38	42	40	44	48	45	49	54						
30	22	24	27	28	31	34	34	37	41	39	42	46	43	47	52						
40	21	23	26	27	30	33	33	35	39	37	41	44	41	45	49						
50	20	22	25	26	28	31	31	34	37	36	39	42	40	43	47						
9 0	19	21	24	25	27	30	30	32	35	34	37	40									
10	18	20	22	24	26	28	28	31	34	32	35	38									
20	18	19	21	22	24	27	27	29	32	31	33	36									
30	16	18	20	21	23	25	25	27	30	29	31	34									
40	15	17	19	20	22	24	24	26	28	27	29	32									

(*Concluded at bottom of next page.*)

DOWNES'S TABLE GIVING VALUES OF τ.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h	Lat. 30°			Lat. 24°			Lat. 18°			Lat. 12°			Lat. 6°			Lat. 0°		
	x′			x′			x′			x′			x′			x′		
	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	6	7	8	7	7	9	7	8	9	7	8	10	7	8	10	8	9	11
20	12	14	16	13	14	18	14	16	19	14	16	20	14	17	21	15	18	21
30	17	20	24	19	22	27	20	24	29	21	25	30	21	25	31	22	26	32
40	23	27	32	25	29	36	26	32	39	28	33	40	28	34	41	29	34	42
50	28	33	40	31	36	44	32	39	48	35	40	50	35	42	51	35	42	52
1 0	33	39	47	36	42	52	38	46	56	40	47	59	41	49	60	41	49	61
10	38	45	54	41	48	59	44	52	63	46	54	67	47	56	68	47	56	69
20	43	50	60	46	54	65	49	58	70	52	60	74	53	62	75	53	63	76
30	48	55	66	51	60	71	54	64	76	57	66	79	58	68	81	59	69	82
40	52	60	71	56	65	77	59	69	82	62	72	84	63	73	87	64	74	88
50	56	64	76	60	69	82	64	74	87	66	77	89	68	78	92	68	79	93
2 0	59	68	80	64	73	86	68	78	91	70	81	95	72	83	97	72	83	98
10	62	72	84	67	77	90	71	81	95	74	85	99	75	87	101	76	87	102
20	65	75	87	70	81	94	74	85	99	77	88	103	78	90	105	79	91	106
30	68	78	90	73	84	97	77	88	102	80	91	106	81	93	108	82	94	109
40	71	81	93	76	87	100	80	91	105	83	94	109	84	96	111	85	97	112
50	74	83	96	78	89	102	82	93	107	85	96	111	87	98	113	87	99	114
3 0	76	85	98	80	91	104	84	95	109	87	98	113	89	100	115	89	101	116
10	77	87	99	82	92	106	86	97	111	89	100	114	91	102	116	91	103	117
20	79	89	101	84	94	107	88	99	112	91	102	115	92	104	118	93	104	118
30	80	90	102	85	95	108	89	100	113	92	103	116	94	105	119	94	105	119
40	81	91	103	86	96	109	90	101	114	93	104	117	95	106	119	95	106	120
50	82	92	104	87	97	110	91	101	114	94	104	118	95	106	120	96	107	120
4 0	83	92	104	88	98	110	92	102	114	94	105	118	96	107	120	97	107	120
10	84	93	104	88	98	110	92	102	114	95	105	118	96	107	120	97	107	120
20	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	120
30	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	119
40	84	93	104	89	98	109	92	102	113	95	104	116	96	106	118	97	107	119
50	84	93	103	88	97	108	92	101	113	94	104	115	96	106	117	96	106	118
5 0	84	92	102	88	97	108	91	101	112	94	103	114	95	105	116	96	105	117
10	83	92	102	88	96	107	91	100	110	93	102	113	95	104	115	95	104	115
20	83	91	101	87	95	106	90	99	109	92	101	112	94	103	114	94	103	114
30	82	90	100	86	94	104	89	98	108	92	100	111	93	102	112	93	102	113
40	81	89	98	85	93	103	88	97	106	91	99	109	92	100	110			
50	80	88	97	84	92	101	87	95	105	89	97	107						
6 0	79	87	95	83	91	100	86	94	103	88	96	105						
10	78	85	94	82	89	98	84	92	101									
20	77	84	92	80	88	96	82	91	99									
30	75	82	90	79	86	94												
40	74	81	88	77	84	92												
50	72	79	86															
7 0	71	77	84															

(*Concluded from preceding page.*)

h	Lat. 72°			Lat. 66°			Lat. 60°			h	Lat. 72°			Lat. 66°			Lat. 60°		
	x′			x′			x′				x′			x′			x′		
	.62	.56	.50	.62	.56	.50	.62	.56	.50		.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	h m	m	m	m	m	m	m	m	m	m
9 50	14	16	18	18	20	22	22	24	26	11 0	7	8	8	9	10	11	10	11	12
10 0	13	15	16	17	19	21	20	22	24	10	6	6	7	7	8	9	9	9	10
10	12	14	15	16	17	19	19	21	22	20	5	5	6	6	6	7	7	8	8
20	11	12	14	15	16	17	17	19	20	30	3	4	4	4	5	5			
30	10	11	12	13	14	16	16	17	18	40	2	3	3	3	3	4			
40	9	10	11	12	13	14	14	15	16	50	1	1	1	1	2	2			
50	8	9	10	10	11	12	12	13	14	12 0	0	0	0	0	0	0			

FOR WASHINGTON MEAN NOON.

Date.	k	i	θ	L	Date.	k	i	θ	L
		°	°				°	°	
Jan. 1	0.978	17.2	8.7	30.9	July 4	0.381	103.7	169.0	39.8
6	0.949	26.0	0.6	36.5	9	0.522	87.4	173.9	49.8
11	0.897	37.5	354.0	44.8	14	0.678	69.1	179.8	59.8
16	0.806	52.3	348.5	55.4	19	0.830	48.7	187.2	67.2
21	0.656	71.8	343.5	65.1	24	0.943	27.5	197.9	67.7
26	0.441	96.8	338.8	63.6	29	0.994	8.9	228.6	60.6
31	0.203	126.5	332.8	39.8	Aug. 3	0.991	11.0	349.3	50.8
Feb. 5	0.038	157.6	314.6	8.7	8	0.958	23.6	8.4	42.4
10	0.020	163.8	203.7	4.3	13	0.914	34.1	15.6	36.2
15	0.122	139.3	176.6	21.2	18	0.867	42.8	19.7	32.3
20	0.260	118.7	170.4	33.2	23	0.819	50.3	22.5	30.1
25	0.389	102.8	166.6	36.5	28	0.770	57.4	24.4	29.2
Mar. 1	0.494	90.7	163.4	35.4	Sept. 2	0.717	64.3	25.8	29.4
6	0.578	81.0	160.5	33.1	7	0.656	71.8	26.9	30.6
11	0.646	73.1	157.6	31.3	12	0.585	80.2	27.2	32.6
16	0.707	65.5	155.0	30.4	17	0.496	90.4	28.2	34.8
21	0.761	58.6	152.6	30.6	22	0.385	103.3	29.8	35.8
26	0.812	51.5	150.6	31.7	27	0.248	120.3	32.0	31.8
31	0.862	43.6	148.9	34.4	Oct. 2	0.102	142.7	36.6	18.0
Apr. 5	0.913	34.4	147.4	38.8	7	0.007	170.3	63.6	1.6
10	0.960	23.0	146.0	45.6	12	0.021	163.2	199.7	4.8
15	0.994	8.7	139.6	54.7	17	0.240	121.3	206.7	44.1
20	0.994	9.1	342.4	64.0	22	0.484	91.7	208.6	63.5
25	0.935	29.6	334.7	69.1	27	0.688	67.9	209.1	61.7
30	0.817	50.6	337.7	66.4	Nov. 1	0.826	49.3	208.6	51.6
May 5	0.668	70.3	342.3	58.0	6	0.908	35.3	207.2	41.7
10	0.521	87.6	345.6	48.2	11	0.955	24.5	204.8	34.4
15	0.389	102.8	348.7	39.3	16	0.981	16.9	200.9	29.5
20	0.273	117.0	350.5	30.9	21	0.989	11.8	193.8	26.3
25	0.172	131.0	354.6	22.2	26	0.999	3.5	164.0	24.8
30	0.088	145.5	358.6	12.9	Dec. 1	0.999	4.1	40.8	24.3
June 4	0.029	160.5	7.9	4.6	6	0.992	9.9	23.4	24.9
9	0.004	172.8	62.2	0.7	11	0.980	16.3	15.5	26.7
14	0.019	164.0	141.8	3.1	16	0.958	23.5	9.6	29.9
19	0.074	148.4	155.1	11.1	21	0.923	32.2	3.9	35.0
24	0.150	134.4	160.7	19.9	26	0.865	43.1	358.4	42.5
29	0.258	118.9	164.8	29.6	31	0.773	56.8	353.6	52.5

NOTATION.

k, the ratio of the illuminated portion of the apparent disk to the entire apparent disk considered as the superfices of a circle.

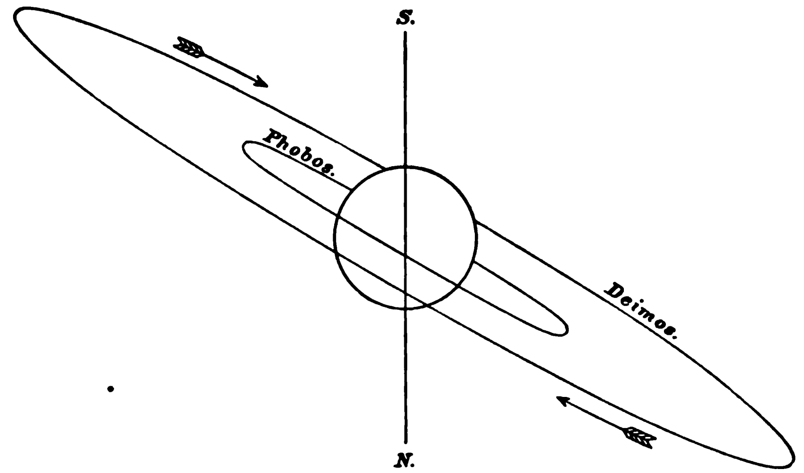
i, the angle between the sun and earth, as seen from the planet.

θ, the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L, the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

Date.	*k*	*i*	*θ*	*L*	Date.	*k*	*i*	*θ*	*L*
		°	°				°	°	
Jan. 1	0.652	72.2	195.9	107.8	July 4	1.000	2.0	208.3	46.9
6	0.671	70.0	193.8	102.8	9	1.000	1.4	291.8	46.9
11	0.689	67.7	191.5	98.1	14	1.000	2.3	338.0	47.0
16	0.707	65.5	189.0	93.7	19	0.999	4.3	352.4	47.1
21	0.723	63.4	186.4	89.6	24	0.997	6.2	359.1	47.3
26	0.739	61.4	183.7	85.8	29	0.995	8.1	3.7	47.5
31	0.754	59.4	180.8	82.3	Aug. 3	0.992	10.0	7.4	47.7
Feb. 5	0.769	57.4	178.0	79.1	8	0.989	12.0	10.2	48.0
10	0.783	55.5	175.1	76.2	13	0.985	13.9	12.7	48.3
15	0.797	53.6	172.3	73.5	18	0.981	15.8	14.7	48.7
20	0.810	51.7	169.6	71.0	23	0.976	17.7	16.3	49.1
25	0.822	49.9	167.0	68.7	28	0.971	19.5	17.6	49.6
Mar. 1	0.834	48.1	164.6	66.5	Sept. 2	0.965	21.4	18.8	50.1
6	0.846	46.2	162.3	64.5	7	0.959	23.3	19.5	50.7
11	0.857	44.4	160.2	62.7	12	0.953	25.1	20.0	51.3
16	0.868	42.6	158.4	61.0	17	0.946	27.0	20.2	52.0
21	0.878	40.8	156.9	59.5	22	0.938	28.8	20.2	52.7
26	0.888	39.0	155.6	58.1	27	0.930	30.6	19.9	53.5
31	0.898	37.2	154.5	56.7	Oct. 2	0.922	32.4	19.3	54.4
Apr. 5	0.907	35.5	153.6	55.5	7	0.914	34.2	18.5	55.4
10	0.916	33.7	153.0	54.4	12	0.905	36.0	17.4	56.5
15	0.924	31.9	152.7	53.4	17	0.896	37.7	16.0	57.6
20	0.932	30.1	152.9	52.5	22	0.886	39.4	14.3	58.8
25	0.940	28.3	153.2	51.7	27	0.876	41.2	12.5	60.2
30	0.947	26.5	153.7	50.9	Nov. 1	0.866	43.0	10.5	61.7
May 5	0.954	24.7	154.5	50.2	6	0.855	44.7	8.2	63.3
10	0.961	22.8	155.7	49.6	11	0.844	46.5	5.8	65.0
15	0.967	21.0	157.2	49.1	16	0.833	48.3	3.3	66.8
20	0.972	19.1	158.9	48.6	21	0.821	50.1	0.7	68.8
25	0.977	17.2	161.0	48.2	26	0.809	51.9	358.1	71.0
30	0.982	15.4	163.4	47.8	Dec. 1	0.796	53.7	355.6	73.4
June 4	0.986	13.5	166.1	47.5	6	0.783	55.5	353.1	76.0
9	0.990	11.6	169.3	47.3	11	0.769	57.4	350.7	78.8
14	0.993	9.6	172.8	47.1	16	0.755	59.3	348.5	81.8
19	0.995	7.7	176.8	47.0	21	0.740	61.3	346.4	85.1
24	0.997	5.8	182.6	47.0	26	0.725	63.3	344.5	88.7
29	0.999	3.8	190.5	46.9	31	0.708	65.4	342.8	92.6



APPARENT ORBITS OF THE SATELLITES OF MARS DURING THE OPPOSITION OF 1896, AS SEEN IN AN INVERTING TELESCOPE.

The circle represents the disk of the planet and is on the same scale as the orbits.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

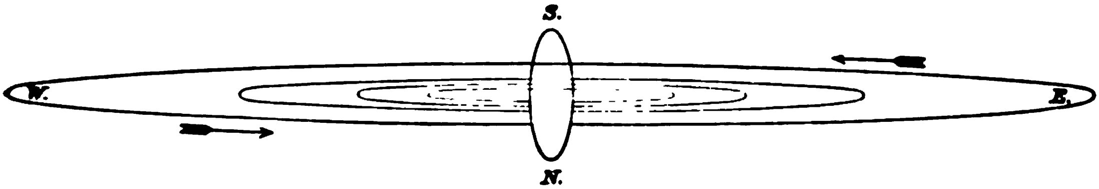
Phobos.												Deimos.							
	d	h			d	h			d	h			d	h			d	h	
Nov.	11	20.2	W.	Nov.	28	13.9	E.	Dec.	15	7.6	W.	Nov.	5	23.4	W.	Dec.	4	8.4	E.
	12	22.9	E.		29	16.7	W.		16	10.4	E.		7	20.8	E.		6	5.8	W.
	14	1.7	W.		30	19.5	E.		17	13.2	W.		9	18.2	W.		8	3.2	E.
	15	4.5	E.	Dec.	1	22.2	W.		18	15.9	E.		11	15.6	E.		10	0.6	W.
	16	7.3	W.		3	1.0	E.		19	18.7	W.		13	13.0	W.		11	22.0	E
	17	10.1	E.		4	3.8	W.		20	21.5	E.		15	10.4	E.		13	19.4	W.
	18	12.9	W.		5	6.6	E.		22	0.3	W.		17	7.8	W.		15	16.8	E
	19	15.6	E.		6	9.4	W.		23	3.1	E.		19	5.2	E.		17	14.2	W
	20	18.4	W.		7	12.1	E.		24	5.9	W.		21	2.6	W.		19	11.6	E
	21	21.2	E.		8	14.9	W.		25	8.7	E.		23	0.0	E		21	9.0	W.
	23	0.0	W.		9	17.7	E.		26	11.5	W.		24	21.4	W.		23	6.4	E
	24	2.8	E.		10	20.5	W.		27	14.2	E.		26	18.8	E.		25	3.8	W
	25	5.6	W.		11	23.3	E.		28	17.0	W.		28	16.2	W		27	1.2	E
	26	8.3	E.		13	2.1	W.		29	19.8	E.		30	13.6	E.		28	22.6	W
	27	11.1	W.		14	4.8	E.		30	22.6	W.	Dec.	2	11.0	W.		30	20.0	E.

Date.		Position Angle.	Distance.	Date.		Position Angle.	Distance.
	d	°	"		d	°	"
Nov.	20	62.5	22.3	Nov.	20	62.9	55.8
Dec.	10	59.3	23.0	Dec.	10	59.9	57.3
	31	56.6	20.4		31	57.3	51.0

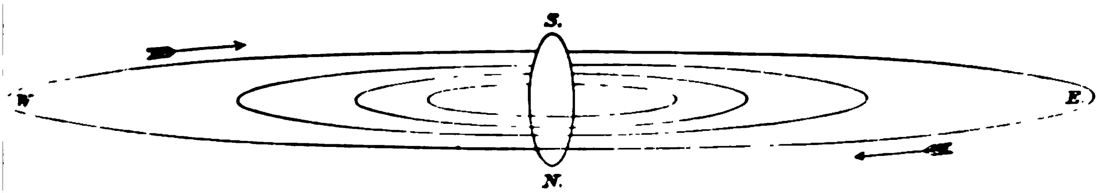
For Phobos every seventh eastern and western elongation is given and for Deimos every third; the intermediate ones may be found by adding the periodic time of each satellite. Periodic time of Phobos, 7h 39m 13s.94. Periodic time of Deimos, 30h 17m 54s.38.

APPARENT DISK OF MARS.

Jan.	1,	0.985	May	30,	0.878	Sept.	27,	0.870
	31,	0.962	June	29,	0.862	Oct.	27,	0.920
March	1,	0.943	July	29,	0.852	Nov.	26,	0.986
	31,	0.921	Aug.	28,	0.852	Dec.	26,	0.987
April	30,	0.898						



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN JANUARY, 1896, AS SEEN IN AN INVERTING TELESCOPE



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN DECEMBER, 1896, AS SEEN IN AN INVERTING TELESCOPE

(*The vertical scale for the planet is three times and for the orbits five times the horizontal one*)

The object of this figure is to facilitate the identification of the satellites in cases where the diagrams of configurations do not suffice for that purpose: reference to the above diagram enables one to identify the inner and outer satellite of the pair. The central, vertical ellipse represents the disk of Jupiter, elongated three times in the vertical direction.

Facing each page of the phenomena of Jupiter's satellites, pages 462—482, is the page of diagrams of configurations, for the same month. The light disks ○ in the vertical row in the middle of the page represent the relative position of Jupiter each day. The dots adjacent in the same horizontal space represent the positions of the several satellites on the same day, at the hour and minute of Washington mean time indicated above the diagrams. The latitudes of the satellites are always considered zero in constructing the diagrams, except where two or more satellites chance to be at nearly the same distance from the planet, when they are placed one above the other according to their apparent latitudes. The numerals designating the satellites are placed on the right or left hand side of the dot, according as the motion of the satellite, for the time of the configuration, is toward the east or toward the west—the motion being always toward the numeral. Frequently, at the epoch of the configuration, one or more satellites will be invisible, being projected on the disk of the planet: this phenomenon is indicated by a light disk ○ at the left hand side of the page. Frequently, also, one or more satellites will be invisible, being concealed in occultation behind the disk, or eclipsed in the shadow of the planet: this phenomenon is indicated by a dark disk ● at the right hand side of the page. In both cases, the annexed numeral serves to point out which satellite is thus rendered invisible.

When an observation is made at a different hour from that for which the diagram is constructed, the motion of the satellite during the interval may be judged by transferring its given position to the above diagram, and estimating its motion during the elapsed interval on the above diagrams of the orbits, by means of the following table of the periods;—

MEAN SYNODIC PERIODS OF THE SATELLITES

	d	h	m	s		d		d	h	m	s		d
I.	1	18	28	35.945	=	1.76986048	III.	7	3	59	35.854	=	7.16638720
II.	3	13	17	53.735	=	3.55409416	IV.	16	18	5	6.928	=	16.75355241

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE I.

		h	m			h	m			h	m			h	m
Jan.	1	4	39.1	March	18	23	59.6	June	4	21	15.4	Oct.	15	16	56.3
	2	23	5.1		20	18	27.1		6	15	45.3		17	11	26.0
	4	17	31.1		22	12	55.0		8	10	15.4		19	5	55.4
	6	11	57.0		24	7	22.8		10	4	45.5		21	0	24.8
	8	6	23.0		26	1	50.6		11	23	15.7		22	18	54.0
	10	0	48.9		27	20	18.5		13	17	45.7		24	13	23.4
	11	19	14.9		29	14	46.6		15	12	15.8		26	7	52.6
	13	13	40.7		31	9	14.6		17	6	45.9		28	2	21.9
	15	8	6.6	April	2	3	42.9		19	1	16.2		29	20	51.0
	17	2	32.4		3	22	11.1		20	19	46.3		31	15	20.2
	18	20	58.2		5	16	39.4		22	14	16.6	Nov.	2	9	49.3
	20	15	24.0		7	11	7.7		24	8	46.8		4	4	18.4
	22	9	50.0		9	5	36.2		26	3	17.1		5	22	47.4
	24	4	15.8		11	0	4.6		27	21	47.3		7	17	16.5
	25	22	41.8		12	18	33.3		29	16	17.6		9	11	45.3
	27	17	7.6		14	13	2.0	July	1	10	47.8		11	6	14.2
	29	11	33.7		16	7	30.7		3	5	18.0		13	0	42.9
	31	5	59.5		18	1	59.4		4	23	48.2		14	19	11.6
Feb.	2	0	25.6		19	20	28.5		6	18	18.6		16	13	40.4
	3	18	51.6		21	14	57.3		8	12	49.0		18	8	9.0
	5	13	17.5		23	9	26.3		10	7	19.3		20	2	37.6
	7	7	43.4		25	3	55.3		12	1	49.5		21	21	6.1
	9	2	9.6		26	22	24.3		13	20	19.9		23	15	34.5
	10	20	35.9		28	16	53.3		15	14	50.1		25	10	2.9
	12	15	2.1		30	11	22.6	Sept.	10	6	59.6		27	4	31.3
	14	9	28.3	May	2	5	51.7		12	1	29.7		28	22	59.6
	16	3	54.6		4	0	21.1		13	19	59.7		30	17	27.8
	17	22	20.9		5	18	50.3		15	14	29.8	Dec.	2	11	55.9
	19	16	47.4		7	13	19.7		17	8	59.8		4	6	23.9
	21	11	13.9		9	7	49.1		19	3	29.9		6	0	51.9
	23	5	40.4		11	2	18.7		20	21	59.8		7	19	19.8
	25	0	7.0		12	20	48.2		22	16	29.8		9	13	47.8
	26	18	33.7		14	15	17.9		24	10	59.7		11	8	15.7
	28	13	0.3		16	9	47.3		26	5	29.7		13	2	43.3
March	1	7	27.3		18	4	17.0		27	23	59.6		14	21	10.9
	3	1	54.2		19	22	46.6		29	18	29.4		16	15	38.5
	4	20	21.2		21	17	16.4	Oct.	1	12	59.2		18	10	6.0
	6	14	48.2		23	11	45.9		3	7	28.9		20	4	33.6
	8	9	15.4		25	6	15.9		5	1	58.7		21	23	1.1
	10	3	42.5		27	0	45.7		6	20	28.3		23	17	28.3
	11	22	9.7		28	19	15.7		8	14	57.9		25	11	55.6
	13	16	37.1		30	13	45.4		10	9	27.6		27	6	22.8
	15	11	4.5	June	1	8	15.4		12	3	57.2		29	0	49.9
	17	5	32.0		3	2	45.3		13	22	26.7		30	19	17.1

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE II.

		h	m			h	m			h	m			h	m
Jan.	1	13	22.0	March	19	14	34.1	June	5	19	12.8	Oct.	15	10	51.5
	5	2	30.1		23	3	47.4		9	8	35.0		19	0	14.6
	8	15	37.4		26	17	1.1		12	21	57.3		22	13	36.4
	12	4	45.2		30	6	15.9		16	11	19.9		26	2	58.8
	15	17	52.3	April	2	19	30.3		20	0	42.6		29	16	20.1
	19	6	59.6		6	8	45.7		23	14	5.6	Nov.	2	5	41.9
	22	20	6.4		9	22	1.6		27	3	28.7		5	19	2.5
	26	9	13.5		13	11	18.1		30	16	51.9		9	8	23.5
	29	22	20.5		17	0	35.0	July	4	6	15.4		12	21	43.3
Feb.	2	11	27.8		20	13	52.4		7	19	38.9		16	11	3.4
	6	0	34.9		24	3	10.1		11	9	2.5		20	0	22.6
	9	13	42.8		27	16	28.3		14	22	26.4		23	13	42.1
	13	2	50.5	May	1	5	46.9	Sept.	9	20	55.3		27	3	0.2
	16	15	58.8		4	19	6.1		13	10	19.7		30	16	18.8
	20	5	7.2		8	8	25.6		16	23	43.7	Dec.	4	5	35.8
	23	18	16.5		11	21	45.5		20	13	8.0		7	18	53.3
	27	7	26.0		15	11	5.6		24	2	31.6		11	8	9.3
March	1	20	36.1		19	0	26.1		27	15	55.5		14	21	25.9
	5	9	46.5		22	13	46.9	Oct.	1	5	18.8		18	10	40.6
	8	22	57.6		26	3	8.0		4	18	42.7		21	23	55.8
	12	12	9.2		29	16	29.3		8	8	5.5		25	13	9.4
	16	1	21.4	June	2	5	50.9		11	21	29.8		28	2	23.6

SATELLITE III.

		h	m			h	m			h	m			h	m
Jan.	7	14	30.7	March	26	3	59.6	June	13	1	7.0	Oct.	27	12	44.4
	14	17	48.2	April	2	7	46.2		20	5	28.8	Nov.	3	16	56.5
	21	21	3.4		9	11	38.3		27	9	52.1		10	21	5.4
	29	0	18.4		16	15	34.8	July	4	14	16.8		18	1	10.7
Feb.	5	3	34.2		23	19	35.5		11	18	42.5		25	5	11.8
	12	6	52.4		30	23	39.6	Sept.	14	10	46.1	Dec	2	9	9.4
	19	10	13.4	May	8	3	46.7		21	15	10.4		9	13	2.7
	26	13	38.2		15	7	57.1		28	19	32.5		16	16	52.4
March	4	17	6.9		22	12	10.8	Oct	5	23	53.6		23	20	36.6
	11	20	40.1		29	16	27.4		13	4	12.5		31	0	18.1
	19	0	17.4	June	5	20	45.9		20	8	29.4				

SATELLITE IV.

		h	m			h	m			h	m			h	m
Jan.	3	21	28.0	March	26	23	40.1	June	18	21	25.7	Oct	14	20	38.7
	20	11	37.4	April	12	16	53.1	July	5	17	46.0		31	16	11.3
Feb.	6	1	42.7		29	11	1.0					Nov	17	11	6.4
	22	16	11.3	May	16	5	55.2	Sept.	11	4	14.7	Dec.	4	5	14.9
March	10	7	26.2	June	2	1	26.3		28	0	36.4		20	22	28.5

WASHINGTON MEAN TIME.

JANUARY.

d	h	m	s			
1	2	58	25.0	I.	Ec.	Dis.
	5	49		I.	Oc.	Re.
	10	51	9.3	II.*	Ec.	Dis.
	14	50		II.*	Oc.	Re.
2	0	16		I.	Sh.	In.
	0	48		I.	Tr.	In.
	2	36		I.	Sh.	Eg.
	3	8		I.	Tr.	Eg.
	21	26	48.8	I.	Ec.	Dis.
3	0	15		I.	Oc.	Re.
	5	1		II.	Sh.	In.
	6	1		II.	Tr.	In.
	7	55		II.*	Sh.	Eg.
	8	56		II.*	Tr.	Eg.
	14	33	28.2	IV.*	Ec.	Dis.
	18	44		I.*	Sh.	In.
	18	58	43.6	IV.	Ec.	Re.
	19	7		IV.	Oc.	Dis.
	19	13		I.	Tr.	In.
	21	4		I.	Sh.	Eg.
	21	14		III.	Sh.	In.
	21	33		I.	Tr.	Eg.
	23	10		III.	Tr.	In.
	23	50		IV.	Oc.	Re.
4	0	51		III.	Sh.	Eg.
	2	50		III.	Tr.	Eg.
	15	55	18.1	I.*	Ec.	Dis.
	18	41		I.*	Oc.	Re.
5	0	9	20.4	II.	Ec.	Dis.
	3	58		II.	Oc.	Re.
	13	13		I.*	Sh.	In.
	13	39		I.*	Tr.	In.
	15	32		I.*	Sh.	Eg.
	15	59		I.*	Tr.	Eg.
6	10	23	43.2	I.*	Ec.	Dis.
	13	7		I.*	Oc.	Re.
	18	18		II.*	Sh.	In.
	19	8		II.	Tr.	In.
	21	12		II.	Sh.	Eg.
	22	3		II.	Tr.	Eg.
7	7	41		I.*	Sh.	In.
	8	5		I.*	Tr.	In.
	10	1		I.*	Sh.	Eg.
	10	25		I.*	Tr.	Eg.
	11	9	3.0	III.*	Ec.	Dis.
	16	21		III.*	Oc.	Re.
8	4	52	11.3	I.	Ec.	Dis.
	7	33		I.*	Oc.	Re.
	13	26	53.0	II.*	Ec.	Dis.
	17	5		II.*	Oc.	Re.
9	2	10		I.	Sh.	In.
	2	32		I.	Tr.	In.
	4	29		I.	Sh.	Eg.
	4	52		I.	Tr.	Eg.
	23	20	37.4	I.	Ec.	Dis.
10	1	59		I.	Oc.	Re.
	7	36		II.*	Sh.	In.
	8	15		II.*	Tr.	In.
	10	30		II.*	Sh.	Eg.
	11	10		II.*	Tr.	Eg.
	20	38		I.	Sh.	In.
	20	57		I.	Tr.	In.
	22	58		I.	Sh.	Eg.
	23	17		I.	Tr.	Eg.
11	1	12		III.	Sh.	In.
	2	27		III.	Tr.	In.
11	4	49		III.	Sh.	Eg.
	6	7		III.	Tr.	Eg.
	17	49	9.1	I.*	Ec.	Dis.
	20	25		I.	Oc.	Ke.
	22	53		IV.	Sh.	In.
12	1	34		IV.	Tr.	In.
	2	45	1.0	II.	Ec.	Dis.
	3	28		IV.	Sh.	Eg.
	6	13		II.	Oc.	Re.
	6	17		IV.	Tr.	Eg.
	15	7		I.*	Sh.	In.
	15	23		I.*	Tr.	In.
	17	27		I.*	Sh.	Eg.
	17	44		I.*	Tr.	Eg.
13	12	17	36.5	I.*	Ec.	Dis.
	14	51		I.*	Oc.	Re.
	20	53		II.	Sh.	In.
	21	22		II.	Tr.	In.
	23	47		II.	Sh.	Eg.
14	0	17		II.	Tr.	Eg.
	9	35		I.*	Sh.	In.
	9	49		I.*	Tr.	In.
	11	55		I.*	Sh.	Eg.
	12	10		I.*	Tr.	Eg.
	15	8	7.7	III.*	Ec.	Dis.
	19	38		III.	Oc.	Re.
15	6	46	7.3	I.*	Ec.	Dis.
	9	17		I.*	Oc.	Re.
	16	2	34.6	II.*	Ec.	Dis
	19	20		II.	Oc.	Re.
16	4	4		I.	Sh.	In.
	4	15		I.	Tr.	In.
	6	23		I.*	Sh.	Eg.
	6	36		I.*	Tr.	Eg.
17	1	14	35.2	I.	Ec.	Dis.
	3	42		I.	Oc.	Re.
	10	10		II.*	Sh.	In.
	10	29		II.*	Tr.	In.
	13	5		II.*	Sh.	Eg.
	13	24		II.*	Tr.	Eg.
	22	32		I.	Sh.	In.
	22	41		I.	Tr.	In.
18	0	52		I.	Sh.	Eg.
	1	2		I.	Tr.	Eg.
	5	10		III.	Sh.	In.
	5	43		III.	Tr.	In.
	8	48		III.*	Sh.	Eg.
	9	23		III.*	Tr.	Eg.
	19	43	9.4	I.	Ec.	Dis.
	22	8		I.	Oc.	Re.
19	5	20	39.6	II.	Ec.	Dis.
	8	27		II.*	Oc.	Re.
	17	1		I.*	Sh.	In.
	17	7		I.*	Tr.	In.
	19	21		I.	Sh.	Eg.
	19	27		I.	Tr.	Eg.
20	8	34	15.2	IV.*	Ec.	Dis.
	13	59		IV.*	Oc.	Re.
	14	11	39.2	I.*	Ec.	Dis.
	16	34		I.*	Oc.	Re.
	23	27		II.	Sh.	In.
	23	36		II.	Tr.	In.
21	2	21		II.	Sh.	Eg.
	2	31		II.	Tr.	Eg.
	11	30		I.*	Sh.	In.
21	11	33		I.*	Tr.	In.
	13	50		I.*	Sh.	Eg.
	13	53		I.*	Tr.	Eg.
	19	6	43.5	III.	Ec.	Dis.
	22	53		III.	Oc.	Re.
22	8	40	12.7	I.*	Ec.	Dis.
	11	0		I.*	Oc.	Re.
	18	38	16.8	II.	Ec.	Dis.
	21	34		II.	Oc.	Re.
23	5	58		I.	Sh.	In.
	5	59		I.	Tr.	In.
	8	18		I.*	Sh.	Eg.
	8	19		I.*	Tr.	Eg.
24	3	6		I.	Oc.	Dis.
	5	26		I.	Oc.	Re.
	12	43		II.*	Tr.	In.
	12	45		II.*	Sh.	In.
	15	38		II.*	Tr.	Eg.
	15	40		II.*	Sh.	Eg.
25	0	25		I.	Tr.	In.
	0	27		I.	Sh.	In.
	2	45		I.	Tr.	Eg.
	2	46		I.	Sh.	Eg.
	8	58		III.*	Tr.	In.
	9	10		III.*	Sh.	In.
	12	38		III.*	Tr.	Eg.
	12	48		III.*	Sh.	Eg.
	21	32		I.	Oc.	Dis.
	23	52	43.8	I.	Ec.	Re.
26	7	46		II.*	Oc.	Dis.
	10	46	30.7	II.*	Ec.	Re.
	18	51		I.	Tr.	In.
	18	56		I.	Sh.	In.
	21	11		I.	Tr.	Eg.
	21	16		I.	Sh.	Eg.
27	15	58		I.*	Oc.	Dis.
	18	21	17.4	I.	Ec.	Re.
28	1	50		II.	Tr.	In.
	2	3		II.	Sh.	In.
	4	45		II.	Tr.	Eg.
	4	58		II.	Sh.	Eg.
	13	17		I.*	Tr.	In.
	13	24		I.*	Sh.	In.
	15	37		I.*	Tr.	Eg.
	15	39		IV.*	Tr.	In.
	15	44		I.*	Sh.	Eg.
	16	52		IV.*	Sh.	In.
	20	22		IV.	Tr.	Eg.
	21	29		IV.	Sh.	Eg.
	22	29		III.	Oc.	Dis.
29	2	34	55.0	III.	Ec.	Re.
	10	24		I.*	Oc.	Dis.
	12	49	54.5	I.*	Ec.	Re.
	20	53		II.	Oc.	Dis.
30	0	4	6.7	II.	Ec.	Re.
	7	43		I.*	Tr.	In.
	7	53		I.*	Sh.	In.
	10	3		I.*	Tr.	Eg.
	10	12		I.*	Sh.	Eg.
31	4	49		I.	Oc.	Dis.
	7	18	28.4	I.*	Ec.	Re.
	14	57		II.*	Tr.	In.
	15	21		II.*	Sh.	In.
	17	52		II.	Tr.	Eg.
	18	16		II.	Sh.	Eg.

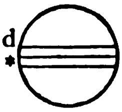
OTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

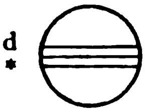
JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

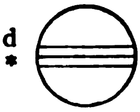
I.



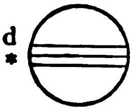
III.



II.



IV.



Configurations at 12ʰ 30ᵐ for an Inverting Telescope.

Day.	West.		East.
1	·4	○	·1 ·3 ·2●
2	·4 ·1	○	2· 3·
3	2 ·4	○	1·3·
4	·23· ·1	○	·4
5	3·	○	1. ·2 ·4
6	·3	○	2· ·4 ·1●
7	2· 1· ·3	○	·4
8	·2	○	·1 ·3 4·
9	1·	○	·2 3· 4·
10	2·	○	1· 3· 4·
11	·2 3· ·1	○	4·
12	3· 4·	○	1· ·2
13	4· ·3 ·1	○	2·
14	4· 2· ·31·	○	
15	4· ·2	○	·1 ·3
16	·4 1·	○	·2 ·3
17	○2· ·4	○	·1 3·
18	·4 ·2 ·1 3·	○	
19	3· ·4	○	1· ·2
20	·3 ·1	○	2· ·4●
21	○1· 2· ·3	○	·4
22	·2	○	·1 ·3 ·4
23	1·	○	·2 ·3 ·4
24		○	2· ·1 3· ·4
25	○3· ·2 ·1	○	4·
26	3·	○	·2 1· 4·
27	·3 ·1	○	2· 4·
28	2· ·3	○	1·4·
29	4· ·2	○	·3 ·1●
30	4· 1·	○	·2 ·3
31	4·	○	2· ·1 3·

WASHINGTON MEAN TIME.

FEBRUARY.

d	h	m	s			
1	2	9		I.	Tr.	In.
	2	21		I.	Sh.	In.
	4	29		I.	Tr.	Eg.
	4	41		I.	Sh.	Eg.
	12	15		III.*	Tr.	In.
	13	9		III.*	Sh.	In.
	15	54		III.*	Tr.	Eg.
	16	47		III.*	Sh.	Eg.
	23	16		I.	Oc.	Dis.
2	1	47	8.7	I.	Ec.	Re.
	10	0		II.*	Oc.	Dis.
	13	22	4.7	II.*	Ec.	Re.
	20	35		I.	Tr.	In.
	20	50		I.	Sh.	In.
	22	55		I.	Tr.	Eg.
	23	10		I.	Sh.	Eg.
3	17	42		I.*	Oc.	Dis.
	20	15	44.5	I.	Ec.	Re.
4	4	4		II.	Tr.	In.
	4	39		II.	Sh.	In.
	6	59		II.	Tr.	Eg.
	7	34		II.*	Sh.	Eg.
	15	1		I.*	Tr.	In.
	15	18		I.*	Sh.	In.
	17	21		I.*	Tr.	Eg.
	17	38		I.*	Sh.	Eg.
5	1	45		III.	Oc.	Dis.
	6	34	1.0	III.*	Ec.	Re.
	12	8		I.*	Oc.	Dis.
	14	44	24.2	I.*	Ec.	Re.
	23	7		II.	Oc.	Dis.
	23	22		IV.	Oc.	Dis.
6	2	39	41.2	II.	Ec.	Re.
	7	8	33.6	IV.*	Ec.	Re.
	9	27		I.*	Tr.	In.
	9	47		I.*	Sh.	In.
	11	47		I.*	Tr.	Eg.
	12	7		I.*	Sh.	Eg.
7	6	33		I.*	Oc.	Dis.
	9	13	0.3	I.*	Ec.	Re.
	17	12		II.	Tr.	In.
	17	57		II.	Sh.	In.
	20	7		II.	Tr.	Eg.
	20	52		II.	Sh.	Eg.
8	3	53		I.	Tr.	In.
	4	15		I.	Sh.	In.
	6	13		I.*	Tr.	Eg.
	6	35		I.*	Sh.	Eg.
	15	32		III *	Tr.	In.
	17	8		III.*	Sh.	In.
	19	11		III.	Tr.	Eg.
	20	47		III.	Sh.	Eg.
9	1	0		I.	Oc.	Dis
	3	41	43.1	I.	Ec.	Re.
	12	15		II.*	Oc.	Dis.
	15	57	36.1	II.*	Ec.	Re.
	22	19		I.	Tr.	In.
	22	44		I.	Sh.	In.
10	0	39		I.	Tr.	Eg.
	1	4		I.	Sh.	Eg
	19	26		I.	Oc.	Dis
10	22	10	21.0	I.	Ec.	Re.
11	6	20		II.*	Tr.	In.
	7	15		II.*	Sh.	In.
	9	15		II.*	Tr.	Eg.
	10	10		II.*	Sh.	Eg.
	16	45		I.*	Tr.	In.
	17	13		I.	Sh.	In.
	19	5		I.	Tr.	Eg.
	19	33		I.	Sh.	Eg.
12	5	3		III.	Oc.	Dis.
	10	33	22.2	III.*	Ec.	Re.
	13	52		I.*	Oc.	Dis.
	16	39	3.3	I.*	Ec.	Re.
13	1	23		II.	Oc.	Dis.
	5	15	13.0	II.	Ec.	Re.
	11	12		I.*	Tr.	In.
	11	42		I.*	Sh.	In.
	13	32		I.*	Tr.	Eg.
	14	2		I.*	Sh.	Eg.
14	5	54		IV.	Tr.	In.
	8	18		I.*	Oc.	Dis.
	10	35		IV.*	Tr.	Eg.
	10	52		IV.*	Sh.	In.
	11	7	41.3	I.*	Ec.	Re.
	15	32		IV.*	Sh.	Eg.
	19	28		II.	Tr.	In.
	20	33		II.	Sh.	In.
	22	23		II.	Tr.	Eg.
	23	28		II.	Sh.	Eg.
15	5	38		I.	Tr.	In.
	6	10		I.*	Sh.	In.
	7	58		I.*	Tr.	Eg.
	8	30		I.*	Sh.	Eg.
	18	52		III.	Tr.	In.
	21	7		III.	Sh.	In.
	22	31		III.	Tr.	Eg.
16	0	46		III.	Sh.	Eg.
	2	45		I.	Oc.	Dis.
	5	36	26.4	I.	Ec.	Re.
	14	31		II.*	Oc.	Dis.
	18	33	4.5	II.	Ec.	Re.
17	0	4		I.	Tr.	In.
	0	39		I.	Sh.	In.
	2	24		I.	Tr.	Eg.
	2	59		I.	Sh.	Eg.
	21	11		I.	Oc.	Dis.
18	0	5	6.6	I.	Ec.	Re.
	8	37		II.*	Tr.	In.
	9	51		II.*	Sh.	In.
	11	32		II.*	Tr.	Eg.
	12	46		II.*	Sh.	Eg.
	18	30		I.	Tr.	In.
	19	7		I.	Sh.	In.
	20	50		I.	Tr.	Eg.
	21	27		I.	Sh.	Eg.
19	8	24		III.*	Oc.	Dis.
	14	33	25.8	III.*	Ec.	Re.
	15	37		I.*	Oc.	Dis.
	18	33	51.1	I.	Ec.	Re.
20	3	40		II.	Oc.	Dis.
	7	50	41.5	II.*	Ec.	Re.
20	12	56		I.*	Tr.	In.
	13	36		I.*	Sh.	In.
	15	16		I.*	Tr.	Eg.
	15	56		I.*	Sh.	Eg.
21	10	4		I.*	Oc.	Dis.
	13	2	31.2	I.*	Ec.	Re.
	21	46		II.	Tr.	In.
	23	9		II.	Sh.	In.
22	0	41		II.	Tr.	Eg.
	2	4		II.	Sh.	Eg.
	7	23		I.*	Tr.	In.
	8	5		I.*	Sh.	In.
	9	43		I.*	Tr.	Eg.
	10	25		I.*	Sh.	Eg.
	13	51		IV.*	Oc.	Dis.
	18	31		IV.	Oc	Re.
	20	38	33.5	IV.	Ec.	Dis
	22	14		III.	Tr.	In.
23	1	6		III.	Sh.	In.
	1	13	40.9	IV.	Ec.	Re.
	1	53		III.	Tr.	Eg.
	4	30		I.	Oc.	Dis.
	4	45		III.	Sh.	Eg.
	7	31	18.3	I.*	Ec.	Re.
	16	49		II.	Oc.	Dis.
	21	8	29.8	II.	Ec.	Re.
24	1	50		I.	Tr.	In.
	2	34		I.	Sh.	In.
	4	10		I.	Tr.	Eg.
	4	54		I.	Sh.	Eg.
	22	57		I.	Oc.	Dis.
25	2	0	0.4	I.	Ec.	Re.
	10	56		II.*	Tr.	In.
	12	27		II.*	Sh.	In.
	13	51		II.*	Tr.	Eg.
	15	22		II.*	Sh.	Eg.
	20	16		I.	Tr.	In.
	21	2		I.	Sh.	In.
	22	36		I.	Tr.	Eg.
	23	22		I.	Sh.	Eg.
26	11	49		III.*	Oc.	Dis.
	17	24		I.	Oc.	Dis.
	18	33	17.2	III.	Ec.	Re.
	20	28	47.3	I.	Ec.	Re.
27	5	59		II.	Oc.	Dis.
	10	26	6.7	II.*	Ec.	Re.
	14	42		I.*	Tr.	In.
	15	31		I.*	Sh.	In.
	17	2		I.	Tr.	Eg.
	17	51		I.	Sh.	Eg.
28	11	50		I.*	Oc.	Dis.
	14	57	29.0	I.*	Ec.	Re.
29	0	7		II.	Tr.	In.
	1	45		II.	Sh.	In
	3	2		II.	Tr.	Eg.
	4	40		II.	Sh	Eg
	9	9		I.*	Tr	In
	9	59		I.*	Sh.	In.
	11	29		I.*	Tr.	Eg.
	12	19		I.*	Sh.	Eg.

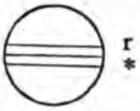
NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

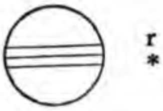
FEBRUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

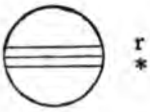
I.



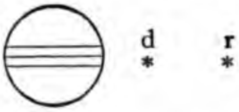
III.



II.



IV.



Configurations at $11^h\ 30^m$ for an Inverting Telescope.

Day.	West.		East.
1	4· 2· 1·	○	3·
2	·4 3·	○	1· ·2●
3	·4 ·3 ·1	○	2·
4	·4 ·3 2·	○	1·
5	·2 ·4 ·1	○	·3
6	○1·	○	·4 ·2 ·3
7		○	·1 2· 3··4
8	2· 1·	○	3· ·4
9	3· ·2	○	·1 ·4
10	3· ·1	○	2· 4·
11	·3 2·	○	1· 4·
12	·2 ·1	○	·3 4·
13	○1·	○	·2 4· ·3
14	4·	○	·1 2· 3·
15	4· 2· 1·	○	3·
16	4· 3· ·2	○	·1
17	4· 3· 1·	○	·2
18	○2·4· ·3	○	1·
19	·4 ·2 ·1	○	·3●
20	·4	○	1· ·2 ·3
21	·4	○	2· 3· ·1●
22	2· 1··4	○	3·
23	3· ·2	○	·1 ·4
24	3· 1·	○	·2 ·4
25	○2· ·3	○	1· ·4
26	·2 ·1 ·3	○	·4
27		○	$^{1\cdot}_{2}$ ·3 4·
28	·1	○	2· 3· 4·
29	2· 1·	○	3· 4·

WASHINGTON MEAN TIME.

MARCH.

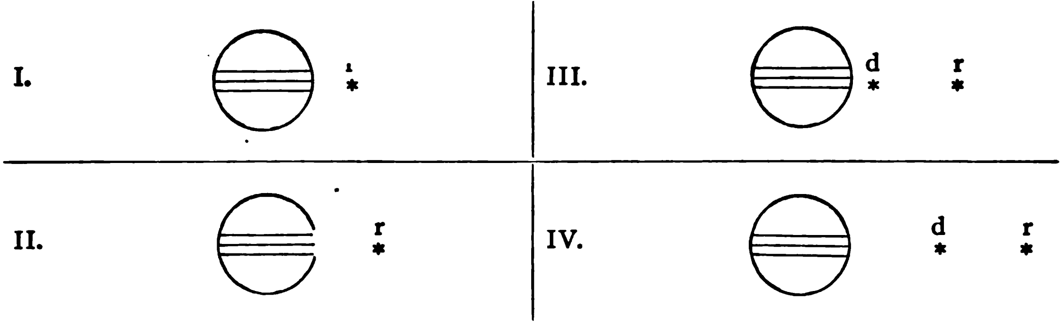
d	h	m	s			
1	1	40		III.	Tr.	In.
	5	5		III.	Sh.	In.
	5	19		III.	Tr.	Eg.
	6	17		I.*	Oc.	Dis.
	8	45		III.*	Sh.	Eg.
	9	26	17.9	I.*	Ec.	Re.
	19	9		II.	Oc.	Dis.
	20	45		IV.	Tr.	In.
	23	43	51.6	II.	Ec.	Re.
2	1	25		IV.	Tr.	Eg.
	3	36		I.	Tr.	In.
	4	28		I.	Sh.	In.
	4	52		IV.	Sh.	In.
	5	56		I.	Tr.	Eg.
	6	48		I.*	Sh.	Eg.
	9	36		IV.*	Sh.	Eg.
3	0	44		I.	Oc.	Dis.
	3	55	1.4	I.	Ec.	Re.
	13	18		II.*	Tr.	In.
	15	3		II.*	Sh.	In.
	16	13		II.*	Tr.	Eg.
	17	58		II.	Sh.	Eg.
	22	3		I.	Tr.	In.
	22	57		I.	Sh.	In.
4	0	23		I.	Tr.	Eg.
	1	17		I.	Sh.	Eg.
	15	17		III.*	Oc.	Dis.
	18	56		III.	Oc.	Re.
	19	2	15.0	III.	Ec.	Dis.
	19	11		I.	Oc.	Dis.
	22	23	50.1	I.	Ec.	Re.
	22	33	39.0	III.	Ec.	Re.
5	8	19		II.*	Oc.	Dis.
	13	1	28.3	II.*	Ec.	Re.
	16	30		I.	Tr.	In.
	17	26		I.	Sh.	In.
	18	50		I.	Tr.	Eg.
	19	46		I.	Sh.	Eg.
6	13	38		I.*	Oc.	Dis.
	16	52	33.4	I.	Ec.	Re.
7	2	30		II.	Tr.	In.
	4	22		II.	Sh.	In.
	5	23		II.	Tr.	Eg.
	7	17		II.*	Sh.	Eg.
	10	57		I.*	Tr.	In.
	11	54		I.*	Sh.	In.
	13	17		I.*	Tr.	Eg.
	14	14		I.*	Sh.	Eg.
8	5	11		III.	Tr.	In.
	8	5		I.*	Oc.	Dis.
	8	49		III.*	Tr.	Eg.
	9	4		III.*	Sh.	In.
	11	21	24.1	I.*	Ec.	Re.
	12	44		III.*	Sh.	Eg.
	21	30		II.	Oc.	Dis.
9	2	19	10.1	II.	Ec.	Re.
	5	24		I.	Tr.	In.
	6	23		I.*	Sh.	In.
	7	44		I.*	Tr.	Eg.
	8	43		I.*	Sh.	Eg.
10	2	33		I.	Oc.	Dis.
	5	7		IV.	Oc.	Dis.
	5	50	9.5	I.	Ec.	Re.
	9	46		IV.*	Oc.	Re.
	14	41	12.3	IV.*	Ec.	Dis.
	15	42		II.*	Tr.	In.
	17	40		II.	Sh.	In.
	18	37		II.	Tr.	Eg.
	19	18	56.7	IV.	Ec.	Re.
10	20	35		II.	Sh.	Eg.
	23	51		I.	Tr.	In.
11	0	52		I.	Sh.	In.
	2	11		I.	Tr.	Eg.
	3	12		I.	Sh.	Eg.
	18	51		III.	Oc.	Dis.
	21	0		I.	Oc.	Dis.
	22	29		III.	Oc.	Re.
	23	1	45.7	III.	Ec.	Dis.
12	0	18	59.7	I.	Ec.	Re.
	3	33	28.3	III.	Ec.	Re.
	10	42		II.*	Oc.	Dis.
	15	36	46.0	II.	Ec.	Re.
	18	18		I.	Tr.	In.
	19	20		I.	Sh.	In.
	20	38		I.	Tr.	Eg.
	21	40		I.	Sh.	Eg.
13	15	27		I.	Oc.	Dis.
	18	47	44.2	I.	Ec.	Re.
14	4	54		II.	Tr.	In.
	6	59		II.*	Sh.	In.
	7	49		II.*	Tr.	Eg.
	9	54		II.*	Sh.	Eg.
	12	45		I.*	Tr.	In.
	13	49		I.*	Sh.	In.
	15	5		I.	Tr.	Eg.
	16	9		I.	Sh.	Eg.
15	8	46		III.*	Tr.	In.
	9	55		I.*	Oc.	Dis.
	12	24		III.*	Tr.	Eg.
	13	4		III.*	Sh.	In.
	13	16	36.3	I.*	Ec.	Re.
	16	44		III.	Sh.	Eg.
	23	54		II.	Oc.	Dis.
16	4	54	25.0	II.	Ec.	Re.
	7	13		I.*	Tr.	In.
	8	18		I.*	Sh.	In.
	9	33		I.*	Tr.	Eg.
	10	38		I.*	Sh.	Eg.
17	4	22		I.	Oc.	Dis.
	7	45	23.1	I.*	Ec.	Re.
	18	8		II.	Tr.	In.
	20	17		II.	Sh.	In.
	21	3		II.	Tr.	Eg.
	23	12		II.	Sh.	Eg.
18	1	40		I.	Tr.	In.
	2	46		I.	Sh.	In.
	4	0		I.	Tr.	Eg.
	5	6		I.	Sh.	Eg.
	12	27		IV.*	Tr.	In.
	17	6		IV.	Tr.	Eg.
	22	28		III.	Oc.	Dis.
	22	50		I.	Oc.	Dis.
	22	53		IV.	Sh.	In.
19	2	7		III.	Oc.	Re.
	2	14	16.8	I.	Ec.	Re.
	3	1	13.2	III.	Ec.	Dis.
	3	39		IV.	Sh.	Eg.
	6	33	13.6	III.*	Ec.	Re.
	13	7		II.*	Oc.	Dis,
	18	11	59.8	II.	Ec.	Re.
	20	8		I.	Tr.	In.
	21	15		I.	Sh.	In.
	22	28		I.	Tr.	Eg.
	23	35		I.	Sh.	Eg.
20	17	17		I.	Oc.	Dis.
	20	43	0.7	I.	Ec.	Re.
21	7	22		II.*	Tr.	In.
	9	36		II.*	Sh.	In.
21	10	17		II.*	Tr.	Eg.
	12	32		II.*	Sh.	Eg.
	14	35		I.*	Tr.	In.
	15	44		I.	Sh.	In.
	16	55		I.	Tr.	Eg.
	18	4		I.	Sh.	Eg.
22	11	45		I.*	Oc.	Dis.
	12	26		III.*	Tr.	In.
	15	11	54.1	I.	Ec.	Re.
	16	4		III.	Tr.	Eg.
	17	3		III.	Sh.	In.
	20	44		III.	Sh.	Eg.
23	2	20		II.	Oc.	Dis.
	7	29	35.6	II.*	Ec.	Re.
	9	3		I.*	Tr.	In.
	10	12		I.*	Sh.	In.
	11	23		I.*	Tr.	Eg.
	12	32		I.*	Sh.	Eg.
24	6	13		I.	Oc.	Dis.
	9	40	41.9	I.*	Ec.	Re.
	20	36		II.	Tr.	In.
	22	54		II.	Sh.	In.
	23	31		II.	Tr.	Eg.
25	1	50		II.	Sh.	Eg.
	3	31		I.	Tr.	In.
	4	41		I.	Sh.	In.
	5	51		I.	Tr.	Eg.
	7	1		I.*	Sh.	Eg.
26	0	41		I.	Oc.	Dis.
	2	11		III.	Oc.	Dis.
	4	9	34.6	I.	Ec.	Re.
	5	49		III.	Oc.	Re.
	7	0	43.2	III.*	Ec.	Dis.
	10	33	0.0	III.*	Ec.	Re.
	15	34		II.*	Oc.	Dis.
	20	47	9.1	II.	Ec.	Re.
	21	21		IV.	Oc.	Dis.
	21	59		I.	Tr.	In.
	23	10		I.	Sh.	In.
27	0	19		I.	Tr.	Eg.
	1	30		I.	Sh.	Eg.
	2	0		IV.	Oc.	Re.
	8	44	51.3	IV.*	Ec.	Dis.
	13	24	51.9	IV.*	Ec.	Re.
	19	19		I.	Oc.	Dis.
	22	38	21.3	I.	Ec.	Re.
28	9	51		II.*	Tr.	In.
	12	13		II.*	Sh.	In.
	12	46		II.*	Tr.	Eg.
	15	9		II.	Sh.	Eg.
	16	27		I.	Tr.	In.
	17	38		I.	Sh.	In.
	18	47		I.	Tr.	Eg.
	19	58		I.	Sh.	Eg.
29	14	37		I.	Oc.	Dis.
	16	11		III.	Tr.	In.
	17	7	15.7	I.	Ec.	Re.
	19	49		III.	Tr.	Eg.
	21	3		III.	Sh.	In.
30	0	44		III.	Sh.	Eg.
	4	48		II.	Oc.	Dis.
	10	4	42.0	II.*	Ec.	Re.
	10	55		I.*	Tr.	In.
	12	7		I.*	Sh.	In.
	13	15		I.*	Tr.	Eg.
	14	27		I.	Sh.	Eg.
31	8	5		I.*	Oc.	Dis.
	11	36	4.6	I.*	Ec.	Re.
	23	7		II.	Tr.	In.

Note.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; *** Visible at Washington.**

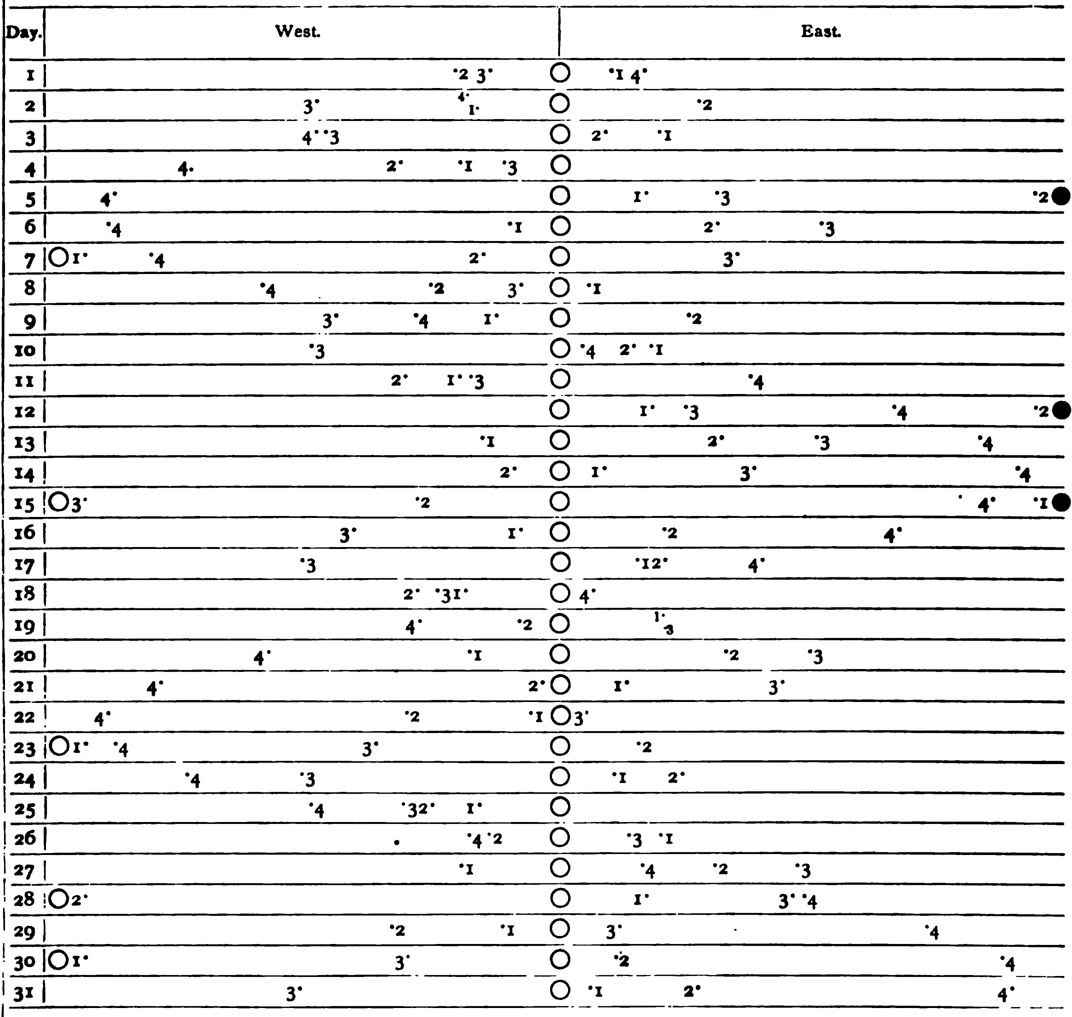
WASHINGTON MEAN TIME.

MARCH.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 11ʰ 0ᵐ for an Inverting Telescope.



Day.	West.		East.
1	·2 3·	○	·1 4·
2	3· 4· 1·	○	·2
3	4· ·3	○	2· ·1
4	4· 2· ·1 ·3	○	
5	4·	○	1· ·3 ·2●
6	·4 ·1	○	2· ·3
7	○1· ·4 2·	○	3·
8	·4 ·2 3·	○	·1
9	3· ·4 1·	○	·2
10	·3	○	·4 2· ·1
11	2· 1· ·3	○	·4
12		○	1· ·3 ·4 ·2●
13	·1	○	2· ·3 ·4
14	2·	○	1· 3· ·4
15	○3· ·2	○	4· ·1●
16	3· 1·	○	·2 4·
17	·3	○	·12· 4·
18	2· ·31·	○	4·
19	4· ·2	○	1· ·3
20	4· ·1	○	·2 ·3
21	4· 2·	○	1· 3·
22	4· ·2 ·1	○	3·
23	○1· ·4 3·	○	·2
24	·4 ·3	○	·1 2·
25	·4 ·32· 1·	○	
26	·4 ·2	○	·3 ·1
27	·1	○	·4 ·2 ·3
28	○2·	○	1· 3· ·4
29	·2 ·1	○	3· ·4
30	○1· 3·	○	·2 ·4
31	3·	○	·1 2· 4·

WASHINGTON MEAN TIME.

APRIL.

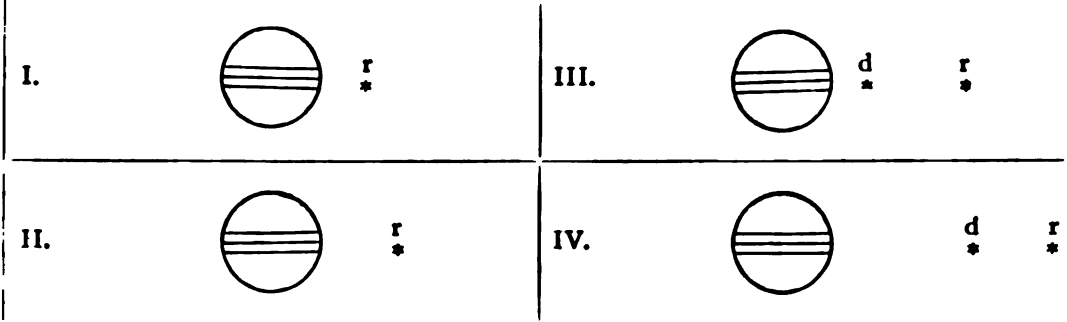
d	h	m	s			
1	1	31		II.	Sh.	In.
	2	2		II.	Tr.	Eg.
	4	27		II.	Sh.	Eg.
	5	23		I.	Tr.	In.
	6	36		I.	Sh.	In.
	7	43		I.*	Tr.	Eg.
	8	56		I.*	Sh.	Eg.
2	2	33		I.	Oc.	Dis.
	5	57		III.	Oc.	Dis.
	6	4	58.5	I.	Ec.	Re.
	9	35		III.*	Oc.	Re.
	11	0	25.3	III.*	Ec.	Dis.
	14	32	57.5	III.	Ec.	Re.
	18	3		II.	Oc.	Dis.
	23	22	14.0	II.	Ec.	Re.
	23	51		I.	Tr.	In.
3	1	5		I.	Sh.	In.
	2	11		I.	Tr.	Eg.
	3	25		I.	Sh.	Eg.
	21	1		I.	Oc.	Dis.
4	0	33	45.7	I.	Ec.	Re.
	5	8		IV.	Tr.	In.
	9	47		IV.*	Tr.	Eg.
	12	24		II.*	Tr.	In.
	14	50		II.*	Sh.	In.
	15	19		II.	Tr.	Eg.
	16	54		IV.	Sh.	In.
	17	46		II.	Sh.	Eg.
	18	19		I.	Tr.	In.
	19	34		I.	Sh.	In.
	20	39		I.	Tr.	Eg.
	21	42		IV.	Sh.	Eg.
	21	54		I.	Sh.	Eg.
5	15	29		I.	Oc.	Dis.
	19	2	40.9	I.	Ec.	Re.
	19	59		III.	Tr.	In.
	23	37		III.	Tr.	Eg.
6	1	2		III.	Sh.	In.
	4	44		III.	Sh.	Eg.
	7	18		II.*	Oc.	Dis.
	12	39	44.0	II.*	Ec.	Re.
	12	47		I.*	Tr.	In.
	14	3		I.*	Sh.	In.
	15	7		I.	Tr.	Eg.
	16	23		I.	Sh.	Eg.
7	9	58		I.*	Oc.	Dis.
	13	31	30.2	I.*	Ec.	Re.
8	1	41		II.	Tr.	In.
	4	9		II.	Sh.	In.
	4	36		II.	Tr.	Eg.
	7	5		II.*	Sh.	Eg.
	7	15		I.*	Tr.	In.
	8	31		I.*	Sh.	In.
	9	35		I.*	Tr.	Eg.
	10	51		I.*	Sh.	Eg.
9	4	26		I.	Oc.	Dis.
	8	0	24.6	I.*	Ec.	Re.
	9	49		III.*	Oc.	Dis.
	13	27		III.*	Oc.	Re.
	15	0	43.4	III.	Ec.	Dis.
	18	33	29.8	III.	Ec.	Re.
	20	34		II.	Oc.	Dis.
10	1	43		I.	Tr.	In.
	1	57	14.4	II.	Ec.	Re.
	3	0		I.	Sh.	In.
	4	3		I.	Tr.	Eg.
	5	20		I.	Sh.	Eg.
	22	55		I.	Oc.	Dis.
11	2	29	11.9	I.	Ec.	Re.
	14	58		II.	Tr.	In.
	17	28		II.	Sh.	In.
	17	52		II.	Tr.	Eg.
	20	12		I.	Tr.	In.
	20	24		II.	Sh.	Eg.
	21	29		I.	Sh.	In.
	22	32		I.	Tr.	Eg.
	23	49		I.	Sh.	Eg.
12	15	34		IV.	Oc.	Dis.
	17	23		I.	Oc.	Dis.
	19	13		IV.	Oc.	Re.
	20	58	7.2	I.	Ec.	Re.
	23	53		III.	Tr.	In.
13	2	48	8.3	IV.	Ec.	Dis.
	3	31		III.	Tr.	Eg.
	5	1		III.	Sh.	In.
	7	30	6.3	IV.*	Ec.	Re.
	8	43		III.*	Sh.	Eg.
	9	51		II.*	Oc.	Dis.
	14	40		I.	Tr.	In.
	15	14	41.6	II.	Ec.	Re.
	15	57		I.	Sh.	In.
	17	0		I.	Tr.	Eg.
	18	17		I.	Sh.	Eg.
14	11	52		I.	Oc.	Dis.
	15	26	56.8	I.	Ec.	Re.
15	4	16		II.	Tr.	In.
	6	46		II.	Sh.	In.
	7	11		II.*	Tr.	Eg.
	9	9		I.*	Tr.	In.
	9	42		II.*	Sh.	Eg.
	10	26		I.*	Sh.	In.
	11	29		I.*	Tr.	Eg.
	12	46		I.*	Sh.	Eg.
16	6	21		I.*	Oc.	Dis.
	9	55	51.7	I.*	Ec.	Re.
	13	46		III.	Oc.	Dis.
	17	24		III.	Oc.	Re.
	19	0	44.0	III.	Ec.	Dis.
	22	33	43.5	III.	Ec.	Re.
	23	8		II.	Oc.	Dis.
17	3	38		I.	Tr.	In.
	4	32	9.7	II.	Ec.	Re.
	4	55		I.	Sh.	In.
	5	58		I.	Tr.	Eg.
	7	15		I.*	Sh.	Eg.
18	0	49		I.	Oc.	Dis.
	4	24	39.6	I.	Ec.	Re.
	17	35		II.	Tr.	In.
	20	5		II.	Sh.	In.
	20	30		II.	Tr.	Eg.
	22	6		I.	Tr.	In.
	23	1		II.	Sh.	Eg.
	23	23		I.	Sh.	In.
19	0	26		I.	Tr.	Eg.
	1	43		I.	Sh.	Eg.
	19	19		I.	Oc.	Dis.
	22	53	35.3	I.	Ec.	Re.
20	3	50		III.	Tr.	In.
	7	29		III.*	Tr.	Eg.
	9	1		III.*	Sh.	In.
	12	25		II.*	Oc.	Dis.
	12	43		III.*	Sh.	Eg.
	16	35		I.	Tr.	In.
	17	49	35.0	II.	Ec.	Re.
	17	52		I.	Sh.	In.
20	18	55		I.	Tr.	Eg.
	20	12		I.	Sh.	Eg.
	22	47		IV.	Tr.	In.
21	3	27		IV.	Tr.	Eg.
	10	55		IV.*	Sh.	In.
	13	47		I.	Oc.	Dis.
	15	45		IV.	Sh.	Eg.
	17	22	25.2	I.	Ec.	Re.
22	6	54		II.	Tr.	In.
	9	24		II.*	Sh.	In.
	9	49		II.*	Tr.	Eg.
	11	4		I.*	Tr.	In.
	12	20		II.*	Sh.	Eg.
	12	21		I.*	Sh.	In.
	13	24		I.	Tr.	Eg.
	14	41		I.	Sh.	Eg.
23	8	16		I.*	Oc.	Dis.
	11	51	20.1	I.*	Ec.	Re.
	17	46		III.	Oc.	Dis.
	21	25		III.	Oc.	Re.
	23	1	8.3	III.	Ec.	Dis.
24	1	43		II.	Oc.	Dis.
	2	34	20.0	III.	Ec.	Re.
	5	33		I.	Tr.	In.
	6	49		I.	Sh.	In.
	7	7	1.5	II.	Ec.	Re.
	7	53		I.*	Tr.	Eg.
	9	9		I.*	Sh.	Eg.
25	2	45		I.	Oc.	Dis.
	6	20	7.9	I.	Ec.	Re.
	20	13		II.	Tr.	In.
	22	43		II.	Sh.	In.
	23	8		II.	Tr.	Eg.
26	0	2		I.	Tr.	In.
	1	18		I.	Sh.	In.
	1	40		II.	Sh.	Eg.
	2	22		I.	Tr.	Eg.
	3	38		I.	Sh.	Eg.
	21	14		I.	Oc.	Dis.
27	0	49	3.6	I.	Ec.	Re.
	7	52		III.*	Tr.	In.
	11	30		III.*	Tr.	Eg.
	13	0		III.	Sh.	In.
	15	1		II.	Oc.	Dis.
	16	42		III.	Sh.	Eg.
	18	31		I.	Tr.	In.
	19	47		I.	Sh.	In.
	20	24	25.2	II.	Ec.	Re.
	20	51		I.	Tr.	Eg.
	22	7		I.	Sh.	Eg.
28	15	43		I.	Oc.	Dis.
	19	17	53.3	I.	Ec.	Re.
29	8	41		IV.*	Oc.	Dis.
	9	32		II.*	Tr.	In.
	12	2		II.*	Sh.	In.
	12	27		II.	Tr.	Eg.
	13	0		I.	Tr.	In.
	13	22		IV.	Oc.	Re.
	14	15		I.	Sh.	In.
	14	58		II.	Sh.	Eg.
	15	20		I.	Tr.	Eg.
	16	35		I.	Sh.	Eg.
	20	51	22.5	IV.	Ec.	Dis.
30	1	34	58.7	IV.	Ec.	Re.
	10	13		I.*	Oc.	Dis.
	13	46	48.5	I.	Ec.	Re.
	21	50		III.	Oc.	Dis.

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 10ʰ 0ᵐ for an Inverting Telescope.

Day.	West.		East.
1	·3 2· 1·	○	4·
2	·2	○	·3 ·1 4·
3	1·	○	2 4· ·3
4	○4·	○	2· 1· 3·
5	4· 2· ·1	○	3·
6	4· 3·	○	1· ·2●
7	4· 3·	○	2· ·1●
8	4· ·3 2· 1·	○	
9	·4 ·2	○	·1 ·3●
10	·4 1·	○	·2 ·3
11	·4	○	2· ·1 3·
12	2· ·1 ·4	○	3·
13	3·	○	1· ·4 ·2●
14	3· ·1	○	2· ·4
15	○1· ·3 2·	○	·4
16	·2 ·3	○	·1 ·4
17	1·	○	·2 ·3 4·
18		○	2 1 ·3 4·
19	2· ·1	○	3· 4·
20	3· 2	○	1· 4·
21	3· 4· ·1	○	·2
22	○2· ·3 4·	○	1·
23	4· ·2 ·3	○	·1●
24	4· 1·	○	·2 ·3
25	·4	○	·1 2· ·3
26	·4 2· 1·	○	3·
27	○3· ·4 ·2	○	·1
28	3· ·4 ·1	○	·2
29	○2· ·3	○	1· ·4●
30	·2 ·3 ·1	○	·4

WASHINGTON MEAN TIME.

MAY

d	h	m	s			
1	1	29		III.	Oc.	Re.
	3	0	56.0	III.	Ec.	Dis.
	4	19		II.	Oc.	Dis.
	6	34	18.3	III.	Ec.	Re.
	7	29		I.*	Tr.	In.
	8	44		I.*	Sh.	In.
	9	41	49.6	II.*	Ec.	Re.
	9	49		I.*	Tr.	Eg.
	11	4		I.*	Sh.	Eg.
2	4	42		I.	Oc.	Dis.
	8	15	36.2	I.*	Ec.	Re.
	22	52		II.	Tr.	In.
3	1	21		II.	Sh.	In.
	1	47		II.	Tr.	Eg.
	1	58		I.	Tr.	In.
	3	12		I.	Sh.	In.
	4	17		II.	Sh.	Eg.
	4	18		I.	Tr.	Eg.
	5	32		I.	Sh.	Eg.
	23	11		I.	Oc.	Dis.
4	2	44	31.5	I.	Ec.	Re.
	11	57		III.*	Tr.	In.
	15	36		III.	Tr.	Eg.
	17	0		III.	Sh.	In.
	17	39		II.	Oc.	Dis.
	20	27		I.	Tr.	In.
	20	42		III.	Sh.	Eg.
	21	41		I.	Sh.	In.
	22	47		I.	Tr.	Eg.
	22	59	11.7	II.	Ec.	Re.
5	0	2		I.	Sh.	Eg.
	17	40		I.	Oc.	Dis.
	21	13	21.0	I.	Ec.	Re.
6	12	13		II.	Tr.	In.
	14	40		II.	Sh.	In.
	14	56		I.	Tr.	In.
	15	8		II.	Tr.	Eg.
	16	10		I.	Sh.	In.
	17	16		I.	Tr.	Eg.
	17	36		II.	Sh.	Eg.
	18	30		I.	Sh.	Eg.
7	12	10		I.	Oc.	Dis.
	15	42	15.8	I.	Ec.	Re.
	17	15		IV.	Tr.	In.
	21	56		IV.	Tr.	Eg.
8	1	57		III.	Oc.	Dis.
	4	56		IV.	Sh.	In.
	5	36		III.	Oc.	Re.
	6	58		II.	Oc.	Dis.
	7	0	34.5	III.	Ec.	Dis.
	9	25		I.*	Tr.	In.
	9	48		IV.*	Sh.	Eg.
	10	34	6.5	III.*	Ec.	Re.
	10	39		I.*	Sh.	In.
	11	45		I.*	Tr.	Eg
	12	16	33.7	II.	Ec.	Re
	13	0		I.	Sh.	Eg.
9	6	39		I.	Oc.	Dis.
	10	11	3.0	I.*	Ec.	Re.
10	1	35		II.	Tr.	In.
	3	54		I.	Tr.	In.
	3	59		II.	Sh.	In.
	4	30		II.	Tr.	Eg.
	5	7		I.	Sh.	In.
	6	14		I.	Tr.	Eg.
	6	56		II.	Sh.	Eg.
	7	27		I.	Sh.	Eg.
11	1	9		I.	Oc.	Dis.
	4	39	58.0	I.	Ec.	Re.

d	h	m	s			
11	16	6		III.	Tr.	In.
	19	45		III.	Tr.	Eg.
	20	18		II.	Oc.	Dis.
	20	59		III.	Sh.	In.
	22	23		I.	Tr.	In.
	23	36		I.	Sh.	In.
12	0	42		III.	Sh.	Eg.
	0	43		I.	Tr.	Eg.
	1	33	54.1	II.	Ec.	Re.
	1	56		I.	Sh.	Eg.
	19	38		I.	Oc.	Dis.
	23	8	47.1	I.	Ec.	Re.
13	14	57		II.	Tr.	In.
	16	53		I.	Tr.	In.
	17	18		II.	Sh.	In.
	17	52		II.	Tr.	Eg.
	18	5		I.	Sh.	In.
	19	13		I.	Tr.	Eg.
	20	14		II.	Sh.	Eg.
	20	25		I.	Sh.	Eg.
14	14	8		I.	Oc.	Dis.
	17	37	41.5	I.	Ec.	Re.
15	6	7		III.	Oc.	Dis.
	9	38		II.*	Oc.	Dis.
	9	47		III.*	Oc.	Re.
	11	0	10.0	III.*	Ec.	Dis.
	11	22		I.*	Tr.	In.
	12	33		I.	Sh.	In.
	13	42		I.	Tr.	Eg.
	14	33	50.6	III.	Ec.	Re.
	14	51	14.1	II.	Ec.	Re.
	14	54		I.	Sh.	Eg.
16	3	34		IV.	Oc.	Dis.
	8	16		IV.*	Oc.	Re.
	8	37		I.*	Oc.	Dis.
	12	6	28.0	I.	Ec.	Re.
	14	55	3.6	IV.	Ec.	Dis.
	19	39	59.6	IV.	Ec.	Re.
17	4	19		II.	Tr.	In.
	5	52		I.	Tr.	In.
	6	37		II.	Sh.	In.
	7	2		I.	Sh.	In.
	7	14		II.	Tr.	Eg.
	8	12		I.*	Tr.	Eg.
	9	22		I.*	Sh.	Eg.
	9	33		II.*	Sh.	Eg.
18	3	7		I	Oc.	Dis.
	6	35	22.4	I.	Ec.	Re.
	20	17		III.	Tr.	In.
	22	59		II.	Oc.	Dis.
	23	57		III.	Tr.	Eg.
19	0	22		I.	Tr.	In.
	0	59		III.	Sh.	In.
	1	31		I.	Sh.	In.
	2	42		I.	Tr.	Eg.
	3	52		I.	Sh.	Eg.
	4	8	33.5	II.	Ec.	Re.
	4	41		III.	Sh.	Eg.
	21	37		I.	Oc.	Dis.
20	1	4	10.7	I.	Ec.	Re.
	17	41		II.	Tr.	In.
	18	51		I.	Tr.	In.
	19	55		II.	Sh.	In.
	19	59		I.	Sh.	In.
	20	36		II.	Tr.	Eg.
	21	11		I.	Tr.	Eg.
	22	20		I.	Sh.	Eg.
	22	51		II.	Sh.	Eg.
21	16	6		I.	Oc.	Dis.

d	h	m	s			
21	19	33	4.7	I.	Ec.	Re.
22	10	21		III.*	Oc.	Dis.
	12	19		II.	Oc.	Dis.
	13	21		I.	Tr.	In.
	14	1		III.	Oc.	Re.
	14	28		I.	Sh.	In.
	14	59	51.6	III.	Ec.	Dis.
	15	41		I.	Tr.	Eg.
	16	48		I.	Sh.	Eg.
	17	25	52.6	II.	Ec.	Re.
	18	33	39.4	III.	Ec.	Re.
23	10	36		I.*	Oc.	Dis.
	14	1	50.5	I.	Ec.	Re.
24	7	3		II.	Tr.	In.
	7	50		I.*	Tr.	In.
	8	57		I.*	Sh.	In.
	9	14		II.*	Sh.	In.
	9	58		II.*	Tr.	Eg.
	10	10		I.*	Tr.	Eg.
	11	17		I.	Sh.	Eg.
	12	10		II.	Sh.	Eg.
	12	24		IV.	Tr.	In.
	17	7		IV.	Tr.	Eg.
	22	57		IV.	Sh.	In.
25	3	50		IV.	Sh.	Eg.
	5	6		I.	Oc.	Dis.
	8	30	43.8	I.*	Ec.	Re.
26	0	32		III.	Tr.	In.
	1	40		II.	Oc.	Dis.
	2	20		I.	Tr.	In.
	3	26		I.	Sh.	In.
	4	12		III.	Tr.	Eg.
	4	40		I.	Tr.	Eg.
	4	58		III.	Sh.	In.
	5	46		I.	Sh.	Eg.
	6	43	11.0	II.	Ec.	Re.
	8	41		III.*	Sh.	Eg.
	23	36		I.	Oc.	Dis.
27	2	59	31.4	I.	Ec.	Re.
	20	26		II.	Tr.	In.
	20	50		I.	Tr.	In.
	21	55		I.	Sh.	In.
	22	33		II.	Sh.	In.
	23	10		I.	Tr.	Eg.
	23	21		II.	Tr.	Eg.
28	0	15		I.	Sh.	Eg.
	1	29		II.	Sh.	Eg.
	18	6		I.	Oc.	Dis.
	21	28	24.6	I.	Ec.	Re.
29	14	37		III.	Oc.	Dis.
	15	2		II.	Oc.	Dis.
	15	20		I.	Tr.	In.
	16	24		I.	Sh.	In.
	17	40		I.	Tr.	Eg.
	18	17		III.	Oc.	Re.
	18	44		I.	Sh.	Eg.
	19	0	6.2	III.	Ec.	Dis.
	20	0	28.6	II.	Ec.	Re.
	22	34	0.4	III.	Ec.	Re.
30	12	35		I.	Oc.	Dis.
	15	57	9.7	I.	Ec.	Re.
31	9	49		II.*	Tr.	In.
	9	49		I.*	Tr.	In.
	10	52		I.	Sh.	In.
	11	51		II.	Sh.	In.
	12	9		I.	Tr.	Eg.
	12	44		II.	Tr.	Eg.
	13	12		I.	Sh.	Eg.
	14	48		II.	Sh.	Eg.

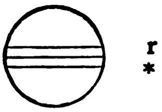
NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse. Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

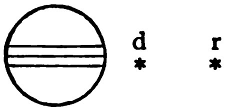
MAY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

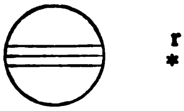
I.



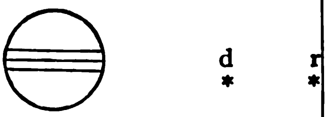
III.



II.



IV.



Configurations at $9^h\ 30^m$ for an Inverting Telescope.

Day.	West.		East.
1	○1·	○	·2 ·3 ·4
2		○	·1 2· ·3 ·4
3	2·1·	○	3· ·4
4	·2	○	3· ·1 4·
5	3· ·1	○	·2 4·
6	·3	○	2· 1· 4·
7	2· ·3 ·1	○	4·
8	○1· 4·	○	·3 ·2●
9	4·	○	·1 2· ·3
10	4· 2· 1·	○	3·
11	4· ·2	○	3· ·1
12	·4 3· 1·	○	·2
13	·4 3·	○	2·1·
14	·4 ·3 2· ·1	○	
15	·4 ·2	○	1· ·3●
16		○	·4 2· ·3 ·1●
17	2· 1·	○	·4 3·
18	·2	○	·1 3· ·4
19	3· 1·	○	·2 ·4
20	3·	○	2· 1· ·4
21	·3 2· ·1	○	4·
22	·2 ·3	○	1· 4·
23	·1	○	·2 ·34·
24	○2· ○1·	○	4· 3·
25	·2 4·	○	·1 3·
26	4· 3· 1·	○	·2
27	4· 3·	○	·12·
28	4· ·3 2· ·1	○	
29	·4 ·2 ·3	○	1·
30	·4 ·1	○	·2 ·3
31	·4	○	2· 1· 3·

WASHINGTON MEAN TIME.

JUNE.

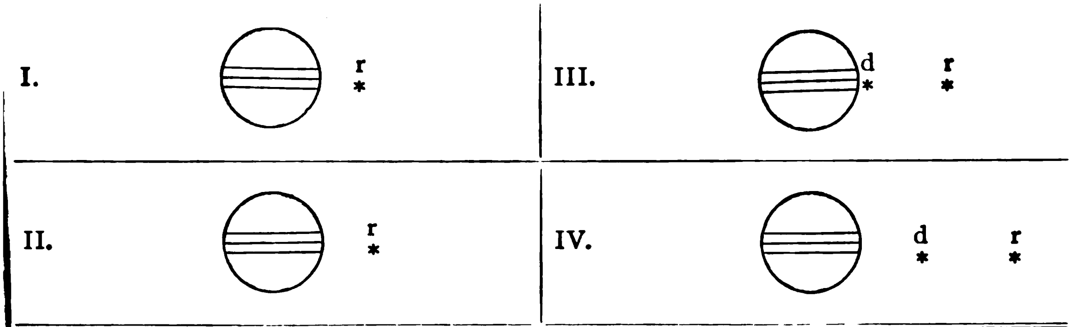
d	h	m	s			
1	7	5		I.	Oc.	Dis.
	10	26	2 :	I.*	Ec.	Re.
	23	4		IV.	Oc.	Dis.
2	3	49		IV.	Oc.	Re.
	4	19		I.	Tr.	In.
	4	23		II.	Oc.	Dis.
	4	48		III.	Tr.	In.
	5	21		I.	Sh.	In.
	6	39		I.	Tr.	Eg.
	7	41		I.	Sh.	Eg.
	8	28		III.*	Tr.	Eg.
	8	57		III.*	Sh.	In.
	8	57	56.5	IV.*	Ec.	Dis.
	9	17	46.5	II.*	Ec.	Re.
	12	40		III.	Sh.	Eg.
	13	43	53.5	IV.	Ec.	Re.
3	1	35		I.	Oc.	Dis.
	4	54	48.8	I.	Ec.	Re.
	22	49		I.	Tr.	In.
	23	12		II.	Tr.	In.
	23	49		I.	Sh.	In.
4	1	9		I.	Tr.	Eg.
	1	10		II.	Sh.	In.
	2	8		II.	Tr.	Eg.
	2	9		I.	Sh.	Eg.
	4	6		II.	Sh.	Eg.
	20	5		I.	Oc.	Dis.
	23	23	41.0	I.	Ec.	Re.
5	17	19		I.	Tr.	In.
	17	45		II.	Oc.	Dis.
	18	18		I.	Sh.	In.
	18	56		III.	Oc.	Dis.
	19	39		I.	Tr.	Eg.
	20	38		I.	Sh.	Eg.
	22	35	3.1	II.	Ec.	Re.
	22	36		III.	Oc.	Re.
	22	59	55 5	III.	Ec.	Dis.
6	2	33	55.0	III.	Ec.	Re.
	14	35		I.	Oc.	Dis.
	17	52	25.1	I.	Ec.	Re.
7	11	49		I.	Tr.	In.
	12	35		II.	Tr.	In.
	12	47		I.	Sh.	In.
	14	9		I.	Tr.	Eg.
	14	29		II.	Sh.	In.
	15	7		I.	Sh.	Eg.
	15	31		II.	Tr.	Eg.
	17	26		II.	Sh.	Eg.
8	9	5		I.*	Oc.	Dis.
	12	21	16.2	I.	Ec.	Re.
9	6	19		I.	Tr.	In.
	7	7		II.	Oc.	Dis.
	7	16		I.	Sh.	In.
	8	39		I.*	Tr.	Eg.
	9	7		III.*	Tr.	In.
	9	36		I.	Sh.	Eg.
	11	52	20.7	II.	Ec.	Re.
	12	47		III.	Tr.	Eg.
	12	56		III.	Sh.	In.
	16	39		III.	Sh.	Eg.
10	3	35		I.	Oc.	Dis.
	6	50	1.7	I.	Ec.	Re.
	8	5		IV.*	Tr.	In.
	12	52		IV.	Tr.	Eg.
	16	58		IV.	Sh.	In.
	21	53		IV.	Sh.	Eg.
11	0	48		I.	Tr.	In.
	1	44		I.	Sh.	In.
	1	59		II.	Tr.	In.
	3	8		I.	Tr.	Eg.
	3	48		II.	Sh.	In.
	4	4		I.	Sh.	Eg.
	4	55		II.	Tr.	Eg.
	6	44		II.	Sh.	Eg.
	22	6		I.	Oc.	Dis.
12	1	18	52.9	I.	Ec.	Re.
	19	18		I.	Tr.	In.
	20	13		I.	Sh.	In.
	20	29		II.	Oc.	Dis.
	21	38		I.	Tr.	Eg.
	22	33		I.	Sh.	Eg.
	23	17		III.	Oc.	Dis.
13	1	9	36.6	II.	Ec.	Re.
	2	57		III.	Oc.	Re.
	3	0	1.0	III.	Ec.	Dis.
	6	34	5.3	III.	Ec.	Re.
	16	36		I.	Oc.	Dis.
	19	47	35.7	I.	Ec.	Re.
14	13	48		I.	Tr.	In.
	14	41		I.	Sh.	In.
	15	23		II.	Tr.	In.
	16	8		I.	Tr.	Eg.
	17	1		I.	Sh.	Eg.
	17	6		II.	Sh.	In.
	18	19		II.	Tr.	Eg.
	20	3		II.	Sh.	Eg.
15	11	6		I.	Oc.	Dis.
	14	16	25.7	I.	Ec.	Re.
16	8	18		I.*	Tr.	In.
	9	10		I.*	Sh.	In.
	9	52		II.	Oc.	Dis.
	10	38		I.	Tr.	Eg.
	11	30		I.	Sh.	Eg.
	13	27		III.	Tr.	In.
	14	26	53.8	II.	Ec.	Re.
	16	55		III.	Sh.	In.
	17	8		III.	Tr.	Eg.
	20	38		III.	Sh.	Eg.
17	5	36		I.	Oc.	Dis.
	8	45	9.9	I.*	Ec.	Re.
18	2	48		I.	Tr.	In.
	3	39		I.	Sh.	In.
	4	47		II.	Tr.	In.
	5	8		I.	Tr.	Eg.
	5	59		I.	Sh.	Eg.
	6	25		II.	Sh.	In.
	7	43		II.	Tr.	Eg.
	9	21		II.*	Sh.	Eg.
	20	3		IV.	Oc.	Dis.
	23	50		IV.	Oc.	Re.
19	0	6		I.	Oc.	Dis.
	3	0	29.1	IV.	Ec.	Dis.
	3	13	59.8	I.	Ec.	Re.
	7	47	8.0	IV.*	Ec.	Re.
	21	18		I.	Tr.	In.
	22	7		I.	Sh.	In.
	23	15		II.	Oc.	Dis.
	23	38		I.	Tr.	Eg.
20	0	28		I.	Sh.	Eg.
	3	38		III.	Oc.	Dis.
	3	44	9.5	II.	Ec.	Re.
	10	33	33.0	III.	Ec.	Re.
20	18	36		I.	Oc.	Dis.
	21	42	41.5	I.	Ec.	Re.
21	15	48		I.	Tr.	In.
	16	36		I.	Sh.	In.
	18	8		I.	Tr.	Eg.
	18	11		II.	Tr.	In.
	18	56		I.	Sh.	Eg.
	19	44		II.	Sh.	In.
	21	7		II.	Tr.	Eg.
	22	40		II.	Sh.	Eg.
22	13	7		I.	Oc.	Dis.
	16	11	29.9	I.	Ec.	Re.
23	10	18		I.	Tr.	In.
	11	4		I.	Sh.	In.
	12	38		II.	Oc.	Dis.
	12	38		I.	Tr.	Eg.
	13	24		I.	Sh.	Eg.
	17	1	27.0	II.	Ec.	Re.
	17	50		III.	Tr.	In.
	20	55		III.	Sh.	In.
	21	31		III.	Tr.	Eg.
24	0	37		III.	Sh.	Eg.
	7	37		I.	Oc.	Dis.
	10	40	12.9	I.	Ec.	Re.
25	4	48		I.	Tr.	In.
	5	33		I.	Sh.	In.
	7	8		I.	Tr.	Eg.
	7	35		II.	Tr.	In.
	7	53		I.*	Sh.	Eg.
	9	2		II.	Sh.	In.
	10	31		II.	Tr.	Eg.
	11	58		II.	Sh.	Eg.
26	2	7		I.	Oc.	Dis.
	5	9	1.7	I.	Ec.	Re.
	23	18		I.	Tr.	In.
27	0	1		I.	Sh.	In.
	1	38		I.	Tr.	Eg.
	2	1		II.	Oc.	Dis.
	2	21		I.	Sh.	Eg.
	4	12		IV.	Tr.	In.
	6	18	43.0	II.	Ec.	Re.
	8	1		III.	Oc.	Dis.
	9	2		IV.	Tr.	Eg.
	10	59		IV.	Sh.	In.
	14	32	47.2	III.	Ec.	Re.
	15	54		IV.	Sh.	Eg.
	20	37		I.	Oc.	Dis.
	23	37	41.9	I.	Ec.	Re.
28	17	48		I.	Tr.	In.
	18	30		I.	Sh.	In.
	20	8		I.	Tr.	Eg.
	20	50		I.	Sh.	Eg.
	20	59		II.	Tr.	In.
	22	21		II.	Sh.	In.
	23	55		II.	Tr.	Eg.
29	1	17		II.	Sh.	Eg.
	15	8		I.	Oc.	Dis.
	18	6	28.8	I.	Ec.	Re.
30	12	19		I.	Tr.	In.
	12	59		I.	Sh.	In.
	14	39		I.	Tr.	Eg.
	15	19		I.	Sh.	Eg.
	15	24		II.	Oc.	Dis.
	19	36	0.6	II.	Ec.	Re.
	22	14		III.	Tr.	In.

NOTE.—*In.*, *denotes ingress*; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * **Visible at Washington.**

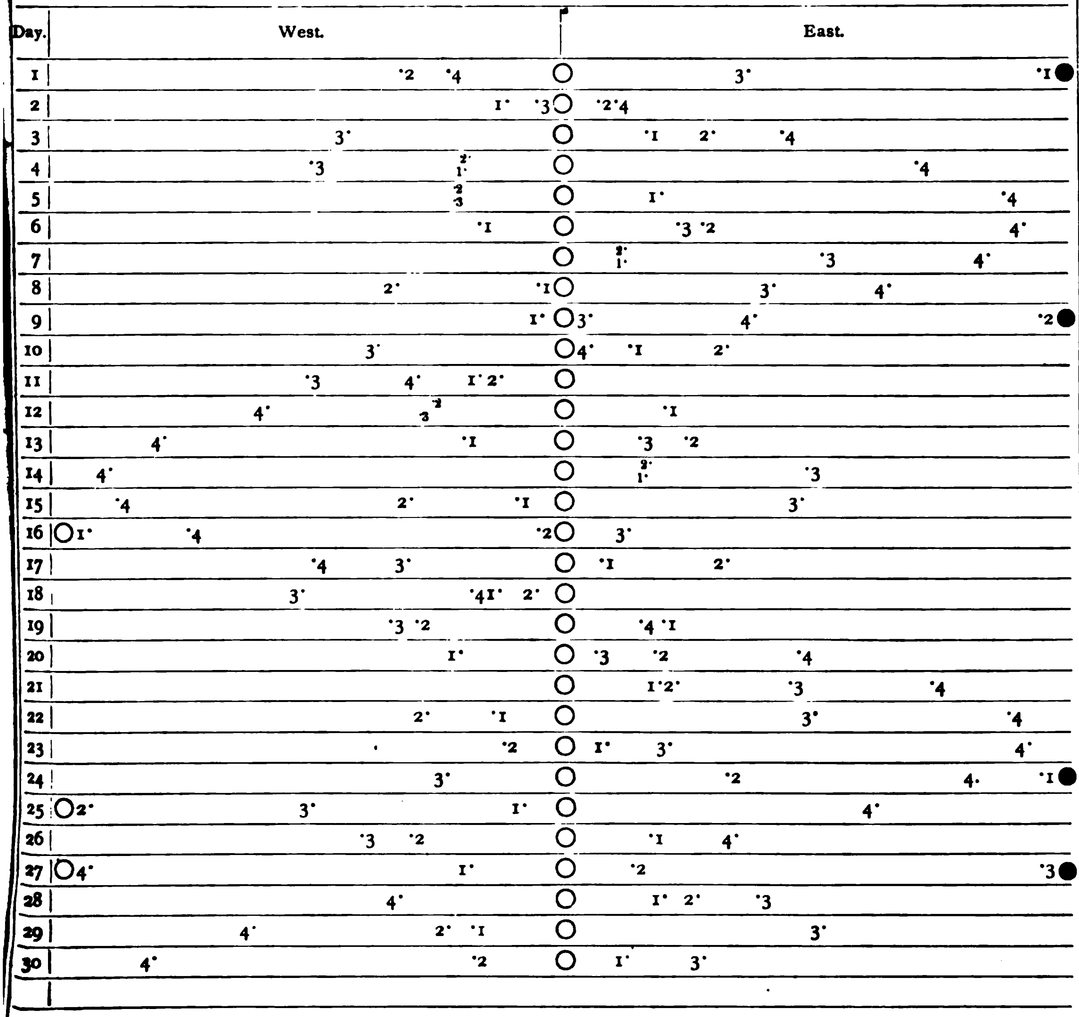
WASHINGTON MEAN TIME.

JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 9ʰ 0ᵐ for an Inverting Telescope.



WASHINGTON MEAN TIME.

JULY.

d	h	m	s			
1	0	54		III.	Sh.	In.
	1	55		III.	Tr.	Eg.
	4	37		III.	Sh.	Eg.
	9	38		I.	Oc.	Dis.
	12	35	10.6	I.	Ec.	Re.
2	6	49		I.	Tr.	In.
	7	27		I.	Sh.	In.
	9	9		I.	Tr.	Eg.
	9	47		I.	Sh.	Eg.
	10	24		II.	Tr.	In.
	11	39		II.	Sh.	In.
	13	20		II.	Tr.	Eg.
	14	35		II.	Sh.	Eg.
3	4	8		I.	Oc.	Dis.
	7	3	57.7	I.	Ec.	Re.
4	1	19		I.	Tr.	In.
	1	56		I.	Sh.	In.
	3	39		I.	Tr.	Eg.
	4	16		I.	Sh.	Eg.
	4	47		II.	Oc.	Dis.
	8	53	17.3	II.*	Ec.	Re.
	12	26		III.	Oc.	Dis.
	18	31	55.2	III.	Ec.	Re.
	22	38		I.	Oc.	Dis.
5	1	32	36.7	I.	Ec.	Re.
	15	20		IV.	Oc.	Dis.
	19	49		I.	Tr.	In.
5	20	12		IV.	Oc.	Re.
	20	24		I.	Sh.	In.
	21	3	12.0	IV.	Ec.	Dis.
	22	9		I.	Tr.	Eg.
	22	44		I.	Sh.	Eg.
	23	49		II.	Tr.	In.
6	0	58		II.	Sh.	In.
	1	50	14.5	IV.	Ec.	Re.
	2	45		II.	Tr.	Eg.
	3	54		II.	Sh.	Eg.
	17	9		I.	Oc.	Dis.
	20	1	22.1	I.	Ec.	Re.
7	14	19		I.	Tr.	In.
	14	53		I.	Sh.	In.
	16	39		I.	Tr.	Eg.
	17	13		I.	Sh.	Eg.
	18	11		II.	Oc.	Dis.
	22	10	34.8	II.	Ec.	Re.
8	2	39		III.	Tr.	In.
	4	53		III.	Sh.	In.
	6	21		III.	Tr.	Eg.
	8	36		III.*	Sh.	Eg.
	11	39		I.	Oc.	Dis.
	14	30	2.2	I.	Ec.	Re.
9	8	49		I.	Tr.	In.
	9	22		I.	Sh.	In.
	11	9		I.	Tr.	Eg.
9	11	42		I.	Sh.	Eg.
	13	14		II.	Tr.	In.
	14	16		II.	Sh.	In.
	16	10		II.	Tr.	Eg.
	17	12		II.	Sh.	Eg.
10	6	9		I.	Oc.	Dis.
	8	58	47.7	I.	Ec.	Re.
11	3	20		I.	Tr.	In.
	3	50		I.	Sh.	In.
	5	40		I.	Tr.	Eg.
	6	11		I.	Sh.	Eg.
	7	34		II.	Oc.	Dis.
	11	27	52.4	II.	Ec.	Re.
	16	51		III.	Oc.	Dis.
	22	31	4.0	III.	Ec.	Re.
12	0	39		I.	Oc.	Dis.
	3	27	25.3	I.	Ec.	Re.
	21	50		I.	Tr.	In.
	22	18		I.	Sh.	In.
13	0	10		I.	Tr.	Eg.
	0	39		I.	Sh.	Eg.
	2	39		II.	Tr.	In.
	3	35		II.	Sh.	In.
	5	35		II.	Tr.	Eg.
	6	31		II.	Sh.	Eg.
	19	10		I.	Oc.	Dis.
	21	56	9.1	I.	Ec.	Re.

THE SATELLITES OF JUPITER

ARE NOT VISIBLE FROM JULY 14TH UNTIL SEPTEMBER 9TH,

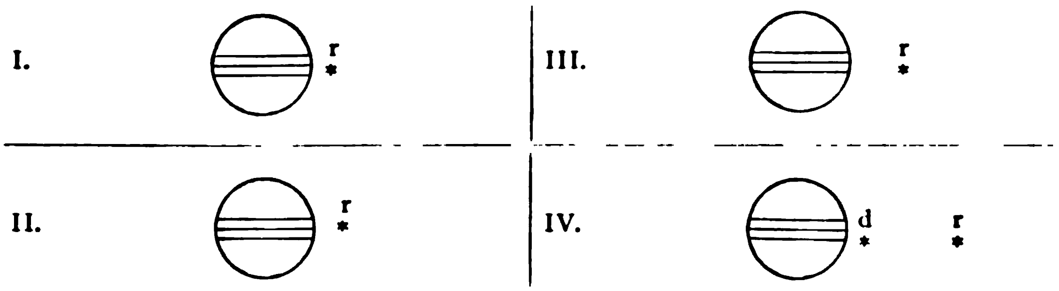
JUPITER BEING TOO NEAR TO THE SUN.

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

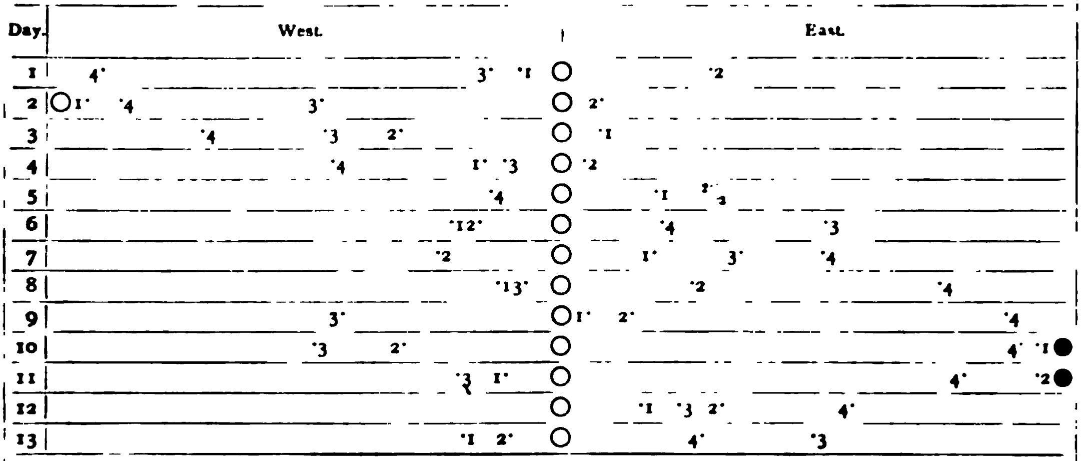
WASHINGTON MEAN TIME.

JULY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 8h 0m for an Inverting Telescope.



WASHINGTON MEAN TIME.

SEPTEMBER.

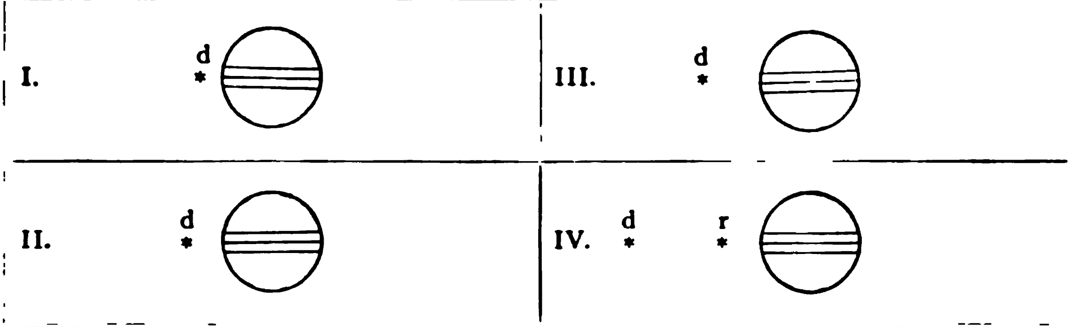
d	h	m	s			
9	8	1		I.	Sh.	In.
	8	28		I.	Tr.	In.
	10	21		I.	Sh.	Eg.
	10	48		I.	Tr.	Eg.
	18	32	17.0	II.	Ec.	Dis.
	22	23		II.	Oc.	Re.
10	5	23	1.0	I.	Ec.	Dis.
	8	10		I.	Oc.	Re.
	16	39		III.*	Sh.	In.
	18	39		III.	Tr.	In.
	20	22		III.	Sh.	Eg.
	21	7	24.2	IV.	Ec.	Dis.
	22	21		III.	Tr.	Eg.
11	2	29		I.	Sh.	In.
	2	58		I.	Tr.	In.
	4	49		I.	Sh.	Eg.
	5	18		I.	Tr.	Eg.
	6	42		IV.	Oc.	Re.
	13	39		II.	Sh.	In.
	14	40		II.	Tr.	In.
	16	35		II.*	Sh.	Eg.
	17	36		II.	Tr.	Eg.
	23	51	31.2	I.	Ec.	Dis.
12	2	40		I.	Oc.	Re.
	20	57		I.	Sh.	In.
	21	28		I.	Tr.	In.
	23	17		I.	Sh.	Eg.
	23	48		I.	Tr.	Eg.
13	7	50	0.8	II.	Ec.	Dis.
	11	48		II.	Oc.	Re.
	18	19	55.2	I.	Ec.	Dis.
	21	10		I.	Oc.	Re.
14	6	46	25.4	III.	Ec.	Dis.
	12	36		III.	Oc.	Re.
	15	26		I.	Sh.	In.
	15	58		I.*	Tr.	In.
	17	46		I.	Sh.	Eg.
	18	18		I.	Tr.	Eg.
15	2	56		II.	Sh.	In.
	4	4		II.	Tr.	In.
	5	52		II.	Sh.	Eg.
	7	0		II.	Tr.	Eg.
	12	48	22.6	I.	Ec.	Dis.
	15	40		I.	Oc.	Re.
16	9	54		I.	Sh.	In.
	10	28		I.	Tr.	In.
	12	14		I.	Sh.	Eg.
16	12	48		I.	Tr.	Eg.
	21	7	18.2	II.	Ec.	Dis.
17	1	12		II.	Oc.	Re.
	7	16	46.4	I.	Ec.	Dis.
	10	10		I.	Oc.	Re.
	20	38		III.	Sh.	In.
	23	4		III.	Tr.	In.
18	0	20		III.	Sh.	Eg.
	2	46		III.	Tr.	Eg.
	4	23		I.	Sh.	In.
	4	58		I.	Tr.	In.
	6	43		I.	Sh.	Eg.
	7	18		I.	Tr.	Eg.
	16	14		II.*	Sh.	In.
	17	28		II.	Tr.	In.
	19	10		II.	Sh.	Eg.
	20	24		II.	Tr.	Eg.
19	1	45	14.9	I.	Ec.	Dis.
	4	40		I.	Oc.	Re.
	4	52		IV.	Sh.	In.
	9	47		IV.	Sh.	Eg.
	10	48		IV.	Tr.	In.
	15	42		IV.	Tr.	Eg.
	22	51		I.	Sh.	In.
	23	28		I.	Tr.	In.
20	1	11		I.	Sh.	Eg.
	1	48		I.	Tr.	Eg.
	10	25	6.5	II.	Ec.	Dis.
	14	36		II.	Oc.	Re.
	20	13	37.4	I.	Ec.	Dis.
	23	10		I.	Oc.	Re.
21	10	45	1.5	III.	Ec.	Dis.
	17	1		III.*	Oc.	Re.
	17	20		I.*	Sh.	In.
	17	58		I.	Tr.	In.
	19	40		I.	Sh.	Eg.
	20	18		I.	Tr.	Eg.
22	5	31		II.	Sh.	In.
	6	52		II.	Tr.	In.
	8	27		II.	Sh.	Eg.
	9	48		II.	Tr.	Eg.
	14	42	3.0	I.	Ec.	Dis.
	17	40		I.	Oc.	Re.
23	11	48		I.	Sh.	In.
	12	28		I.	Tr.	In.
	14	8		I.	Sh.	Eg.
	14	49		I.	Tr.	Eg.
23	23	42	24.4	II.	Ec.	Dis
24	3	59		II.	Oc.	Re.
	9	10	25.1	I.	Ec.	Dis.
	12	10		I.	Oc.	Re.
25	0	36		III.	Sh.	In.
	3	27		III.	Tr.	In.
	4	18		III.	Sh.	Eg.
	6	17		I.	Sh.	In.
	6	58		I.	Tr.	In.
	7	9		III.	Tr.	Eg.
	8	37		I.	Sh.	Eg.
	9	18		I.	Tr.	Eg.
	18	48		II.	Sh.	In.
	20	15		II.	Tr.	In.
	21	44		II.	Sh.	Eg.
	23	11		II.	Tr.	Eg.
26	3	38	52.0	I.	Ec.	Dis.
	6	40		I.	Oc.	Re.
27	0	45		I.	Sh.	In.
	1	28		I.	Tr.	In.
	3	5		I.	Sh.	Eg.
	3	48		I.	Tr.	Eg.
	13	0	17.3	II.	Ec.	Dis.
	15	7	7.6	IV.	Ec.	Dis.
	17	23		II.*	Oc.	Re.
	19	51	38.0	IV.	Ec.	Re.
	22	7	13.1	I.	Ec.	Dis.
	22	10		IV.	Oc.	Dis.
28	1	10		I.	Oc.	Re.
	3	3		IV.	Oc.	Re.
	14	42	56.2	III.	Ec.	Dis.
	19	13		I.	Sh.	In.
	19	58		I.	Tr.	In.
	21	23		III.	Oc.	Re.
	21	33		I.	Sh.	Eg.
	22	18		I.	Tr.	Eg.
29	8	5		II.	Sh.	In.
	9	38		II.	Tr.	In.
	11	1		II.	Sh.	Eg.
	12	33		II.	Tr.	Eg.
	16	35	36.7	I.*	Ec.	Dis.
	19	40		I.	Oc.	Re.
30	13	42		I.	Sh.	In.
	14	28		I.	Tr.	In.
	16	2		I.*	Sh.	Eg.
	16	48		I.*	Tr.	Eg.

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

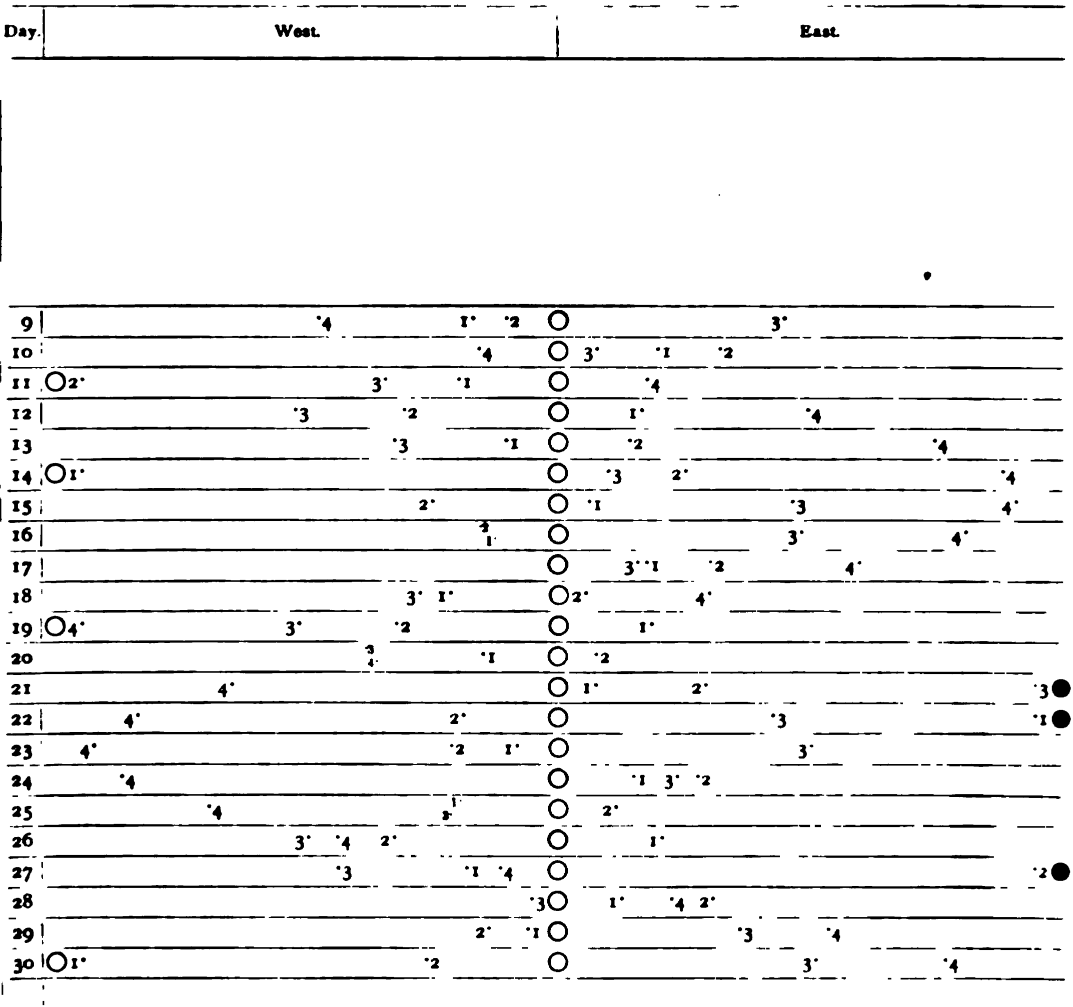
WASHINGTON MEAN TIME.

SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 16h 30m for an Inverting Telescope.



WASHINGTON MEAN TIME.

OCTOBER.

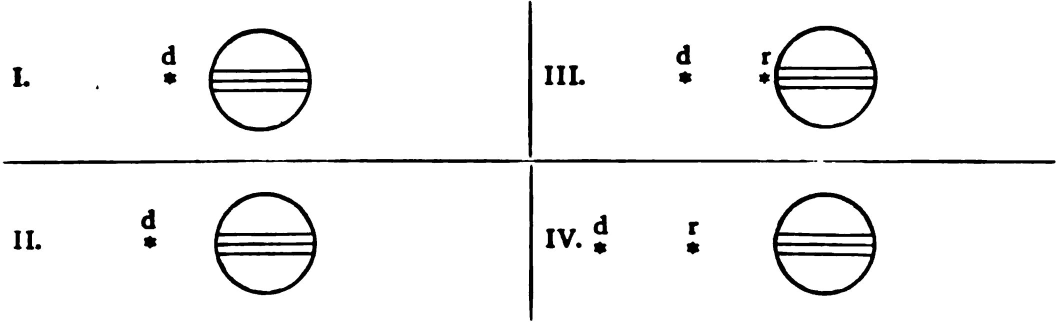
d	h	m	s			
1	2	17	35.2	II.	Ec.	Dis.
	6	46		II.	Oc.	Re.
	11	3	57.4	I.	Ec.	Dis.
	14	10		I.	Oc.	Re.
2	4	34		III.	Sh.	In.
	7	50		III.	Tr.	In.
	8	10		I.	Sh.	In.
	8	16		III.	Sh.	Eg.
	8	58		I.	Tr.	In.
	10	30		I.	Sh.	Eg.
	11	18		I.	Tr.	Eg.
	11	31		III.	Tr.	Eg.
	21	22		II.	Sh.	In.
	23	1		II.	Tr.	In.
3	0	18		II.	Sh.	Eg.
	1	56		II.	Tr.	Eg.
	5	32	22.4	I.	Ec.	Dis.
	8	39		I.	Oc.	Re.
4	2	38		I.	Sh.	In.
	3	28		I.	Tr.	In.
	4	58		I.	Sh.	Eg.
	5	48		I.	Tr.	Eg.
	15	35	32.4	II.*	Ec.	Dis.
	20	10		II.	Oc.	Re.
5	0	0	42.1	I.	Ec.	Dis.
	3	9		I.	Oc.	Re.
	18	40	37.2	III.	Ec.	Dis.
	21	7		I.	Sh.	In.
	21	58		I.	Tr.	In.
	22	50		IV.	Sh.	In.
	23	27		I.	Sh.	Eg.
6	0	18		I.	Tr.	Eg.
	1	44		III.	Oc.	Re.
	3	44		IV.	Sh.	Eg.
	6	59		IV.	Tr.	In.
	10	39		II.	Sh.	In.
	11	50		IV.	Tr.	Eg.
	12	24		II.	Tr.	In.
	13	35		II.	Sh.	Eg.
	15	19		II.*	Tr.	Eg.
	18	29	4.0	I.	Ec.	Dis.
	21	38		I.	Oc.	Re.
7	15	35		I.*	Sh.	In.
	16	28		I.*	Tr.	In.
	17	55		I.	Sh.	Eg.
	18	48		I.	Tr.	Eg.
8	4	52	50.7	II.	Ec.	Dis.
	9	33		II.	Oc.	Re.
	12	57	23.2	I.	Ec.	Dis.
	16	8		I.*	Oc.	Re.
9	8	32		III.	Sh.	In.
	10	4		I.	Sh.	In.
	10	58		I.	Tr.	In.
	12	11		III.	Tr.	In.
	12	14		III.	Sh.	Eg.
	12	24		I.	Sh.	Eg.
	13	18		I.	Tr.	Eg.
	15	51		III.*	Tr.	Eg.
	23	56		II.	Sh.	In.
10	1	47		II.	Tr.	In.
	2	52		II.	Sh.	Eg.
	4	42		II.	Tr.	Eg.
	7	25	46.4	I.	Ec.	Dis.
	10	38		I.	Oc.	Re.
11	4	32		I.	Sh.	In.
	5	27		I.	Tr.	In.
	6	52		I.	Sh.	Eg.
	7	47		I.	Tr.	Eg.
	18	10	52.5	II.	Ec.	Dis.
	22	57		II.	Oc.	Re.
12	1	54	4.6	I.	Ec.	Dis.
	5	7		I.	Oc.	Re.
	22	38	16.8	III.	Ec.	Dis.
	23	1		I.	Sh.	In.
	23	57		I.	Tr.	In.
13	1	21		I.	Sh.	Eg.
	2	10	39.6	III.	Ec.	Re.
	2	17		I.	Tr.	Eg.
	2	23		III.	Oc.	Dis.
	6	2		III.	Oc.	Re.
	13	13		II.	Sh.	In.
	15	9		II.*	Tr.	In.
	16	9		II.*	Sh.	Eg.
	18	4		II.	Tr.	Eg.
	20	22	24.8	I.	Ec.	Dis.
	23	37		I.	Oc.	Re.
14	9	7	1.7	IV.	Ec.	Dis.
	13	50	9.4	IV	Ec.	Re.
	17	29		I.*	Sh.	In.
	18	14		IV.	Oc.	Dis.
	18	26		I.	Tr.	In.
	19	49		I.	Sh.	Eg.
	20	46		I.	Tr.	Eg.
	23	3		IV.	Oc.	Re.
15	7	28	11.4	II.	Ec.	Dis.
	12	19		II.	Oc.	Re.
	14	50	42.6	I.*	Ec.	Dis.
	18	6		I.	Oc.	Re.
16	11	57		I.	Sh.	In.
	12	30		III.	Sh.	In.
	12	56		I.	Tr.	In.
	14	17		I.	Sh.	Eg.
	15	16		I.*	Tr.	Eg.
	16	12		III.*	Sh.	Eg.
	16	29		III.*	Tr.	In.
	20	9		III.	Tr.	Eg.
17	2	30		II.	Sh.	In.
	4	31		II.	Tr.	In.
	5	26		II.	Sh.	Eg.
	7	25		II.	Tr.	Eg.
	9	19	4.2	I.	Ec.	Dis.
	12	36		I.	Oc.	Re.
18	6	26		I.	Sh.	In.
	7	25		I.	Tr.	In.
	8	46		I.	Sh.	Eg.
	9	45		I.	Tr.	Eg.
	20	46	17.7	II.	Ec.	Dis.
19	1	42		II.	Oc.	Re.
	3	47	21.4	I.	Ec.	Dis.
	7	5		I.	Oc.	Re.
20	0	54		I.	Sh.	In.
	1	55		I.	Tr.	In.
	2	35	59.0	III.	Ec.	Dis.
	3	14		I.	Sh.	Eg.
	4	15		I.	Tr.	Eg.
	6	8	6.5	III.	Ec.	Re.
	6	40		III.	Oc.	Dis.
	10	19		III.	Oc.	Re.
	15	47		II.*	Sh.	In.
	17	53		II.*	Tr.	In.
	18	42		II.	Sh.	Eg.
	20	47		II.	Tr.	Eg.
	22	15	40.1	I.	Ec.	Dis.
21	1	35		I.	Oc.	Re.
	19	23		I.	Sh.	In.
	20	24		I.	Tr.	In.
	21	43		I.	Sh.	Eg.
	22	44		I.	Tr.	Eg.
22	10	3	37.3	II.	Ec.	Dis.
22	15	4		II.*	Oc.	Re.
	16	43	56.7	I.*	Ec.	Dis.
	16	47		IV.*	Sh.	In.
	20	4		I.	Oc.	Re.
	21	40		IV.	Sh.	Eg.
23	2	48		IV.	Tr.	In.
	7	34		IV.	Tr.	Eg.
	13	51		I.	Sh.	In.
	14	54		I.*	Tr.	In.
	16	11		I.*	Sh.	Eg.
	16	28		III.*	Sh.	In.
	17	14		I.*	Tr.	Eg.
	20	9		III.	Sh.	Eg.
	20	45		III.	Tr.	In.
24	0	24		III.	Tr.	Eg.
	5	4		II.	Sh.	In.
	7	14		II.	Tr.	In.
	8	0		II.	Sh.	Eg.
	10	8		II.	Tr.	Eg.
	11	12	17.0	I.	Ec.	Dis.
	14	33		I.*	Oc.	Re.
25	8	19		I.	Sh.	In.
	9	23		I.	Tr.	In.
	10	39		I.	Sh.	Eg.
	11	43		I.	Tr.	Eg.
	23	21	48.0	II.	Ec.	Dis.
26	4	26		II.	Oc.	Re.
	5	40	33.1	I.	Ec.	Dis.
	9	3		I.	Oc.	Re.
27	2	48		I.	Sh.	In.
	3	53		I.	Tr.	In.
	5	8		I.	Sh.	Eg.
	6	13		I.	Tr.	Eg.
	6	34	13.6	III.	Ec.	Dis.
	10	6	5.2	III.	Ec.	Re.
	10	55		III.	Oc.	Dis.
	14	34		III.*	Oc.	Re.
	18	21		II.	Sh.	In.
	20	35		II.	Tr.	In.
	21	16		II.	Sh.	Eg.
	23	29		II.	Tr.	Eg.
28	0	8	50.4	I.	Ec.	Dis.
	3	32		I.	Oc.	Re.
	21	16		I.	Sh.	In.
	22	22		I.	Tr.	In.
	23	36		I.	Sh.	Eg.
29	0	42		I.	Tr.	Eg.
	12	39	8.3	II.	Ec.	Dis.
	17	47		II.*	Oc.	Re.
	18	37	6.0	I.	Ec.	Dis.
	22	1		I.	Oc.	Re.
30	15	45		I.*	Sh.	In.
	16	52		I.*	Tr.	In.
	18	5		I.	Sh.	Eg.
	19	12		I.	Tr.	Eg.
	20	26		III.	Sh.	In.
31	0	7		III.	Sh.	Eg.
	0	59		III.	Tr.	In.
	3	5	52.8	IV.	Ec.	Dis.
	4	36		III.	Tr.	Eg.
	7	38		II.	Sh.	In.
	7	47	17.8	IV.	Ec.	Re.
	9	55		II.	Tr.	In.
	10	33		II.	Sh.	Eg.
	12	49		II.	Tr.	Eg.
	13	5	24.7	I.	Ec.	Dis.
	13	49		IV.*	Oc.	Dis.
	16	30		I.*	Oc.	Re.
	18	33		IV.	Oc.	Re.

Note.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * **Visible at Washington.**

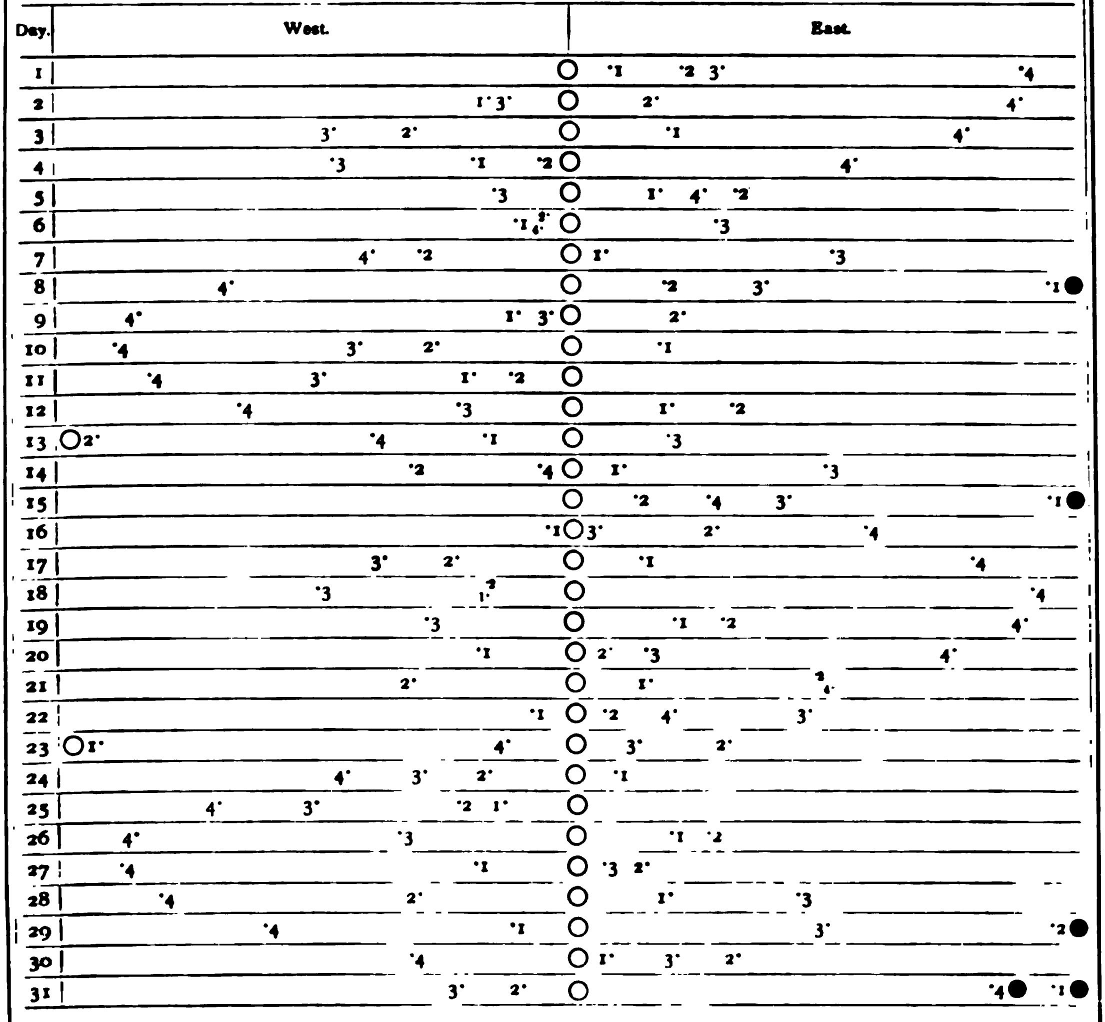
WASHINGTON MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 16ʰ 0ᵐ for an Inverting Telescope.



WASHINGTON MEAN TIME.

NOVEMBER.

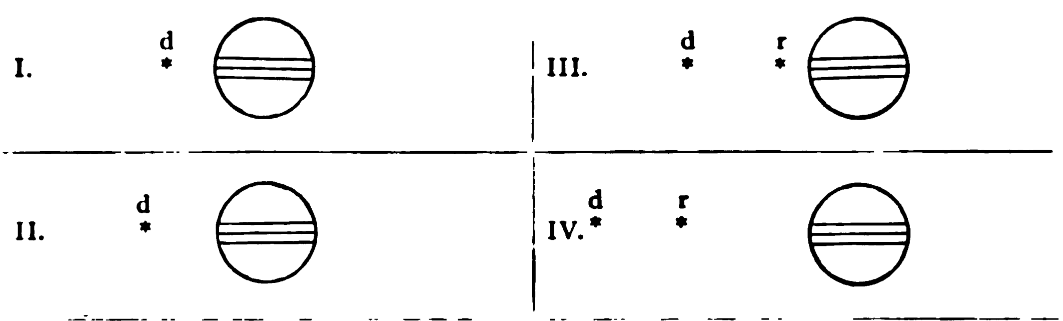
d	h	m	s			
1	10	13		I.	Sh.	In.
	11	21		I.	Tr.	In.
	12	33		I.	Sh.	Eg.
	13	41		I.*	Tr.	Eg.
2	1	57	23.0	II.	Ec.	Dis.
	7	9		II.	Oc.	Re.
	7	33	40.1	I.	Ec.	Dis.
	10	59		I.	Oc.	Re.
3	4	41		I.	Sh.	In.
	5	50		I.	Tr.	In.
	7	1		I.	Sh.	Eg.
	8	10		I.	Tr.	Eg.
	10	31	58 2	III.	Ec.	Dis.
	14	3	32.8	III.*	Ec.	Re.
	15	8		III.*	Oc.	Dis.
	18	45		III.	Oc.	Re.
	20	55		II.	Sh.	In.
	23	15		II.	Tr.	In.
	23	51		II.	Sh.	Eg.
4	2	1	56.3	I.	Ec.	Dis.
	2	9		II.	Tr.	Eg.
	5	28		I.	Oc.	Re.
	23	9		I.	Sh.	In.
5	0	19		I.	Tr.	In.
	1	29		I.	Sh.	Eg.
	2	38		I.	Tr.	Eg.
	15	14	33.4	II.*	Ec.	Dis.
	20	29		II.	Oc.	Re.
	20	30	10.5	I.	Ec.	Dis.
	23	57		I.	Oc.	Re.
6	17	38		I.*	Sh.	In.
	18	48		I.	Tr.	In.
	19	58		I.	Sh.	Eg.
	21	7		I.	Tr.	Eg.
7	0	24		III.	Sh.	In.
	4	4		III.	Sh.	Eg.
	5	10		III.	Tr.	In.
	8	46		III.	Tr.	Eg.
	10	11		II.	Sh.	In.
	12	35		II.	Tr.	In.
	13	7		II.	Sh.	Eg.
	14	58	28.2	I.*	Ec.	Dis.
	15	29		II.*	Tr.	Eg.
	18	26		I.	Oc.	Re.
8	10	44		IV.	Sh.	In.
	12	6		I.	Sh.	In.
	13	17		I.	Tr.	In.
	14	26		I.*	Sh.	Eg.
	15	35		IV.*	Sh.	Eg.
	15	36		I.*	Tr.	Eg.
	22	3		IV.	Tr.	In.
9	2	43		IV.	Tr.	Eg.
	4	33	2.0	II.	Ec.	Dis.
	9	26	42.7	I.	Ec.	Dis.
	9	50		II.	Oc.	Re.
	12	55		I.	Oc.	Re.
10	6	35		I.	Sh.	In.
	7	46		I.	Tr.	In.
	8	55		I.	Sh.	Eg.
	10	5		I.	Tr.	Eg.
	14	29	56.6	III.*	Ec.	Dis.
	18	1	13.2	III.*	Ec.	Re.
	19	17		III.	Oc.	Dis.
	22	54		III.	Oc.	Re.
	23	27		II.	Sh.	In.
11	1	54		II.	Tr.	In.
11	2	23		II.	Sh.	Eg.
	3	54	58.1	I.	Ec.	Dis.
	4	48		II.	Tr.	Eg.
	7	24		I.	Oc.	Re.
12	1	3		I.	Sh.	In.
	2	15		I.	Tr.	In.
	3	23		I.	Sh.	Eg.
	4	34		I.	Tr.	Eg.
	17	50	23.1	II.*	Ec.	Dis.
	22	23	11.6	I.	Ec.	Dis.
	23	10		II.	Oc.	Re.
13	1	53		I.	Oc.	Re.
	19	32		I.	Sh.	In.
	20	44		I.	Tr.	In.
	21	52		I.	Sh.	Eg.
	23	3		I.	Tr.	Eg.
14	4	22		III.	Sh.	In.
	8	2		III.	Sh.	Eg.
	9	18		III.	Tr.	In.
	12	44		II.	Sh.	In.
	12	53		III.	Tr.	Eg.
	15	13		II.*	Tr.	In.
	15	39		II.*	Sh.	Eg.
	16	51	28.5	I.*	Ec.	Dis.
	18	6		II.*	Tr.	Eg.
	20	21		I.	Oc.	Re.
15	14	0		I.*	Sh.	In.
	15	13		I.*	Tr.	In.
	16	20		I.*	Sh.	Eg.
	17	32		I.*	Tr.	Eg.
16	7	8	25.0	II.	Ec.	Dis.
	11	19	42.2	I.	Ec.	Dis.
	12	30		II.	Oc.	Re.
	14	50		I.*	Oc.	Re.
	21	4	30.4	IV.	Ec.	Dis.
17	1	43	55.4	IV.	Ec.	Re.
	8	28		I.	Sh.	In.
	8	48		IV.	Oc.	Dis.
	9	42		I.	Tr.	In.
	10	48		I.	Sh.	Eg.
	12	1		I.	Tr.	Eg.
	13	25		IV.*	Oc.	Re.
	18	27	17.3	III.*	Ec.	Dis.
	21	58	15.1	III.	Ec.	Re.
	23	23		III.	Oc.	Dis.
18	2	0		II.	Sh.	In.
	2	58		III.	Oc.	Re.
	4	31		II.	Tr.	In.
	4	56		II.	Sh.	Eg.
	5	47	56.6	I.	Ec.	Dis.
	7	24		II.	Tr.	Eg.
	9	19		I.	Oc.	Re.
19	2	56		I.	Sh.	In.
	4	11		I.	Tr.	In.
	5	16		I.	Sh.	Eg.
	6	30		I.	Tr.	Eg.
	20	26	7.2	II.	Ec.	Dis.
20	0	16	9.6	I.	Ec.	Dis.
	1	49		II.	Oc.	Re.
	3	47		I.	Oc.	Re.
	21	25		I.	Sh.	In.
	22	39		I.	Tr.	In.
	23	45		I.	Sh.	Eg.
21	0	58		I.	Tr.	Eg.
	8	20		III.	Sh.	In.
21	12	0		III.	Sh.	Eg.
	13	22		III.*	Tr.	In.
	15	17		II.*	Sh.	In.
	16	56		III.*	Tr.	Eg.
	17	49		II.*	Tr.	In.
	18	12		II.*	Sh.	Eg.
	18	44	25.5	I.	Ec.	Dis.
	20	42		II.	Tr.	Eg.
	22	16		I.	Oc.	Re.
22	15	53		I.*	Sh.	In.
	17	8		I.*	Tr.	In.
	18	13		I.*	Sh.	Eg.
	19	27		I.	Tr.	Eg.
23	9	44	32.6	II.	Ec.	Dis.
	13	12	39.3	I.*	Ec.	Dis.
	15	8		II.*	Oc.	Re.
	16	44		I.*	Oc.	Re.
24	10	22		I.	Sh.	In.
	11	36		I.	Tr.	In.
	12	42		I.*	Sh.	Eg.
	13	55		I.*	Tr.	Eg.
	22	24	29.0	III.	Ec.	Dis.
25	1	55	7.0	III.	Ec.	Re.
	3	25		III.	Oc.	Dis.
	4	34		II.	Sh.	In.
	4	40		IV.	Sh.	In.
	6	59		III	Oc.	Re.
	7	7		II.	Tr.	In.
	7	29		II.	Sh.	Eg.
	7	40	52.8	I.	Ec.	Dis.
	9	30		IV.	Sh.	Eg.
	10	0		II.	Tr.	Eg.
	11	13		I.	Oc.	Re.
	16	36		IV.*	Tr.	In.
	21	9		IV.	Tr.	Eg.
26	4	50		I.	Sh.	In.
	6	5		I.	Tr.	In.
	7	10		I.	Sh.	Eg.
	8	24		I.	Tr.	Eg.
	23	1	56.0	II.	Ec.	Dis.
27	2	9	5.5	I.	Ec.	Dis.
	4	26		II.	Oc.	Re.
	5	41		I.	Oc.	Re.
	23	18		I.	Sh.	In.
28	0	34		I.	Tr.	In.
	1	38		I.	Sh.	Eg.
	2	53		I.	Tr.	Eg.
	12	18		III.	Sh.	In.
	15	57		III.*	Sh.	Eg.
	17	23		III.*	Tr.	In.
	17	51		II.*	Sh.	In.
	20	24		II.	Tr.	In.
	20	37	20.5	I.	Ec.	Dis.
	20	46		II.	Sh.	Eg.
	20	57		III.	Tr.	Eg.
	23	16		II.	Tr.	Eg.
29	0	9		I.	Oc.	Re.
	17	47		I.*	Sh.	In.
	19	2		I.	Tr.	In.
	20	7		I.	Sh.	Eg.
	21	21		I.	Tr.	Eg.
30	12	20	24.1	II.	Ec.	Dis.
	15	5	34.1	I.*	Ec.	Dis.
	17	45		II.*	Oc.	Re.
	18	38		I.	Oc.	Re.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

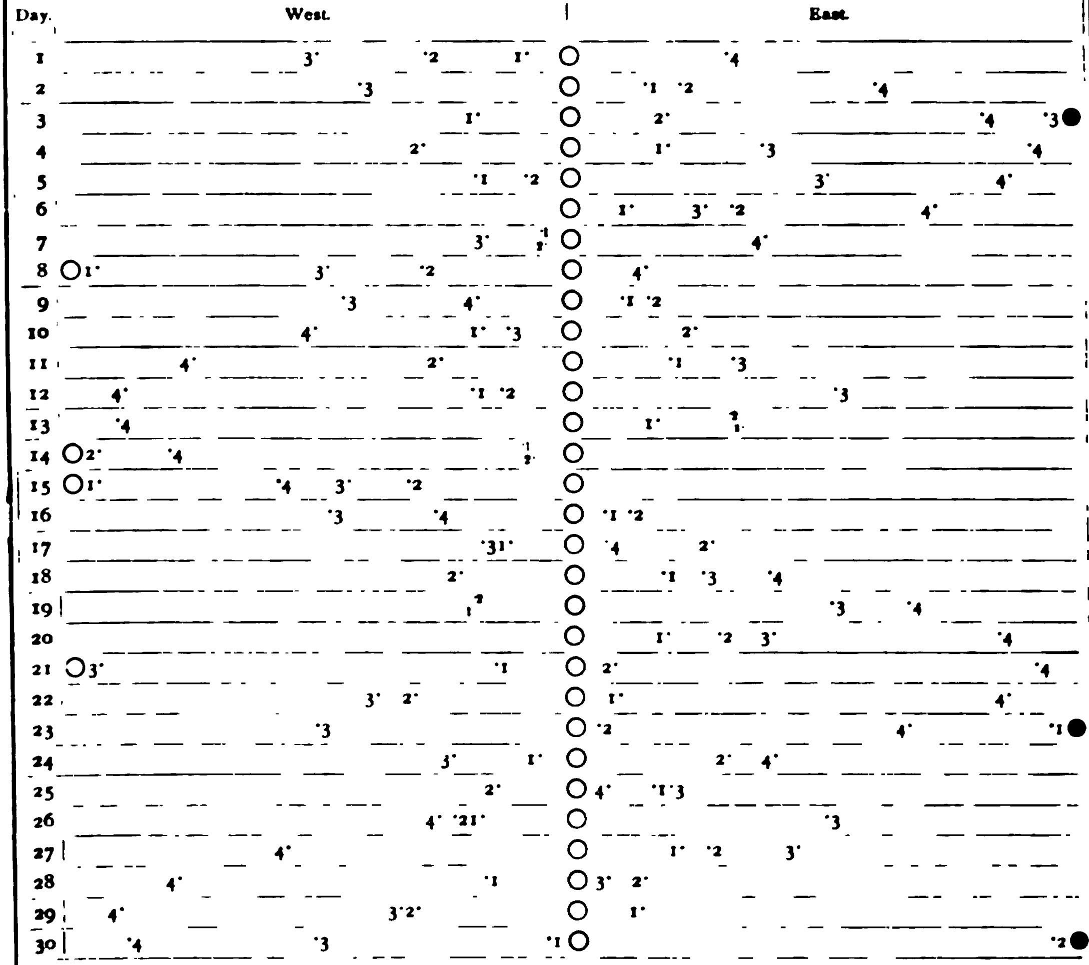
WASHINGTON MEAN TIME.

NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 15ʰ 30ᵐ for an Inverting Telescope.



WASHINGTON MEAN TIME.

DECEMBER.

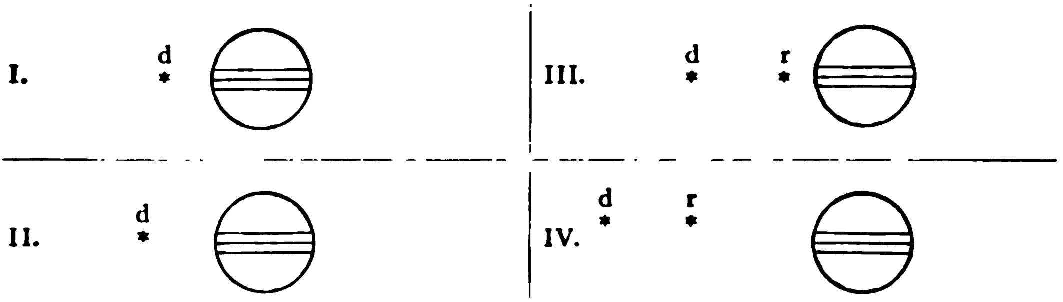
d	h	m	s			
1	12	15		I.*	Sh.	In.
	13	30		I.*	Tr.	In.
	14	35		I.*	Sh.	Eg.
	15	50		I.*	Tr.	Eg.
2	2	21	45.5	III.	Ec.	Dis.
	5	52	3.0	III.	Ec.	Re.
	7	7		II.	Sh.	In.
	7	23		III.	Oc.	Dis.
	9	33	47.2	I.	Ec.	Dis.
	9	41		II.	Tr.	In.
	10	2		II.	Sh.	Eg.
	10	56		III.	Oc.	Re.
	12	33		II.*	Tr.	Eg.
	13	6		I.*	Oc.	Re.
3	6	43		I.	Sh.	In.
	7	58		I.	Tr.	In.
	9	3		I.	Sh.	Eg.
	10	17		I.	Tr.	Eg.
	15	3	38.1	IV.*	Ec.	Dis.
	19	40	49.3	IV.	Ec.	Re.
4	1	37	48.8	II.	Ec.	Dis.
	3	1		IV.	Oc.	Dis.
	4	1	59.7	I.	Ec.	Dis.
	7	2		II.	Oc.	Re.
	7	30		IV.	Oc.	Re.
	7	34		I.	Oc.	Re.
5	1	12		I.	Sh.	In.
	2	26		I.	Tr.	In.
	3	32		I.	Sh.	Eg.
	4	45		I.	Tr.	Eg.
	16	15		III.*	Sh.	In.
	19	55		III.	Sh.	Eg.
	20	24		II.	Sh.	In.
	21	19		III.	Tr.	In.
	22	30	14.6	I.	Ec.	Dis.
	22	57		II.	Tr.	In.
	23	19		II.	Sh.	Eg.
6	0	52		III.	Tr.	Eg.
	1	49		II.	Tr.	Eg.
	2	2		I.	Oc.	Re.
	19	40		I.	Sh.	In.
	20	54		I.	Tr.	In.
	22	0		I.	Sh.	Eg.
	23	13		I.	Tr.	Eg.
7	14	56	20.0	II.*	Ec.	Dis.
	16	58	28.3	I.*	Ec.	Dis.
	20	19		II.	Oc.	Re.
	20	29		I.	Oc.	Re.
8	14	8		I.*	Sh.	In.
	15	22		I.*	Tr.	In.
	16	28		I.*	Sh.	Eg.
	17	41		I.*	Tr.	Eg.
9	6	19	8.8	III.	Ec.	Dis.
	9	40		II.	Sh.	In.
	9	49	4.8	III.	Ec.	Re.
	11	17		III.	Oc.	Dis.
	11	26	41.3	I.	Ec.	Dis.
	12	12		II.*	Tr.	In.
	12	34		II.*	Sh.	Eg.
	14	49		III.*	Oc.	Re.
	14	57		I.*	Oc.	Re.
	15	4		II.*	Tr.	Eg.
10	8	37		I.	Sh.	In.
	9	50		I.	Tr.	In.
	10	57		I.	Sh.	Eg.
	12	9		I.*	Tr.	Eg.
11	4	13	46.0	II.	Ec.	Dis.
	5	54	53.8	I.	Ec.	Dis.
	9	25		I.	Oc.	Re.
	9	35		II.	Oc.	Re.
11	22	38		IV.	Sh.	In.
12	3	5		I.	Sh.	In.
	3	25		IV.	Sh.	Eg.
	4	18		I.	Tr.	In.
	5	25		I.	Sh.	Eg.
	6	37		I.	Tr.	Eg.
	10	20		IV.	Tr.	In.
	14	45		IV.*	Tr.	Eg.
	20	13		III.	Sh.	In.
	22	57		II.	Sh.	In.
	23	52		III.	Sh.	Eg.
13	0	23	8.5	I.	Ec.	Dis.
	1	11		III.	Tr.	In.
	1	27		II.	Tr.	In.
	1	51		II.	Sh.	Eg.
	3	53		I.	Oc.	Re.
	4	19		II.	Tr.	Eg.
	4	43		III.	Tr.	Eg.
	21	33		I.	Sh.	In.
	22	46		I.	Tr.	In.
	23	53		I.	Sh.	Eg.
14	1	5		I.	Tr.	Eg.
	17	32	19.0	II.*	Ec.	Dis.
	18	51	22.3	I.	Ec.	Dis.
	22	21		I.	Oc.	Re.
	22	52		II.	Oc.	Re.
15	16	2		I.*	Sh.	In.
	17	14		I.*	Tr.	In.
	18	22		I.*	Sh.	Eg.
	19	33		I.	Tr.	Eg.
16	10	17	10.4	III.	Ec.	Dis.
	12	13		II.*	Sh.	In.
	13	19	35.4	I.*	Ec.	Dis.
	13	46	44.0	III.*	Ec.	Re.
	14	41		II.*	Tr.	In.
	15	7		III.*	Oc.	Dis.
	15	8		II.*	Sh.	Eg.
	16	48		I.*	Oc.	Re.
	17	33		II.*	Tr.	Eg.
	18	38		III.*	Oc.	Re.
17	10	30		I.	Sh.	In.
	11	42		I.*	Tr.	In.
	12	50		I.*	Sh.	Eg.
	14	1		I.*	Tr.	Eg.
18	6	49	45.8	II.	Ec.	Dis.
	7	47	48.1	I.	Ec.	Dis.
	11	16		I.*	Oc.	Re.
	12	6		II.*	Oc.	Re.
19	4	58		I.	Sh.	In.
	6	10		I.	Tr.	In.
	7	18		I.	Sh.	Eg.
	8	29		I.	Tr.	Eg.
20	0	10		III.	Sh.	In.
	1	30		II.	Sh.	In.
	2	16	2.7	I.	Ec.	Dis.
	3	49		III.	Sh.	Eg.
	3	55		II.	Tr.	In.
	4	24		II.	Sh.	Eg.
	4	58		III.	Tr.	In.
	5	43		I.	Oc.	Re.
	6	46		II.	Tr.	Eg.
	8	29		III.	Tr.	Eg.
	9	2	12.0	IV.	Ec.	Dis.
	13	36	44.2	IV.*	Ec.	Re.
	20	19		IV.	Oc.	Dis.
	23	27		I.	Sh.	In.
21	0	37		I.	Tr.	In.
	0	40		IV.	Oc.	Re.
	1	47		I.	Sh.	Eg.
	2	56		I.	Tr.	Eg.
21	20	8	20.7	II.	Ec.	Dis.
	20	44	17.1	I.	Ec.	Dis.
22	0	11		I.	Oc.	Re.
	1	21		II.	Oc.	Re.
	17	55		I.*	Sh.	In.
	19	5		I.	Tr.	In.
	20	15		I.	Sh.	Eg.
	21	24		I.	Tr.	Eg.
23	14	14	46.2	III.*	Ec.	Dis.
	14	46		II.*	Sh.	In.
	15	12	30.4	I.*	Ec.	Dis.
	17	8		II.*	Tr.	In.
	17	40		II.*	Sh.	Eg.
	17	43	56.4	III.*	Ec.	Re.
	18	38		I.*	Oc.	Re.
	18	52		III.	Oc.	Dis.
	19	59		II.	Tr.	Eg.
	22	22		III.	Oc.	Re.
24	12	24		I.*	Sh.	In.
	13	32		I.*	Tr.	In.
	14	44		I.*	Sh.	Eg.
	15	51		I.*	Tr.	Eg.
25	9	25	49.2	II.	Ec.	Dis.
	9	40	44.0	I.	Ec.	Dis.
	13	5		I.*	Oc.	Re.
	14	35		II.*	Oc.	Re.
26	6	52		I.	Sh.	In.
	8	0		I.	Tr.	In.
	9	12		I.	Sh.	Eg.
	10	19		I.	Tr.	Eg.
27	4	3		II.	Sh.	In.
	4	8		III.	Sh.	In.
	4	8	59.0	I.	Ec.	Dis.
	6	21		II.	Tr.	In.
	6	57		II.	Sh.	Eg.
	7	32		I.	Oc.	Re.
	7	47		III.	Sh.	Eg.
	8	41		III.	Tr.	In.
	9	12		II.	Tr.	Eg.
	12	11		III.*	Tr.	Eg.
28	1	21		I.	Sh.	In.
	2	27		I.	Tr.	In.
	3	41		I.	Sh.	Eg.
	4	46		I.	Tr.	Eg.
	16	35		IV.*	Sh.	In.
	21	20		IV.	Sh.	Eg.
	22	37	14.0	I.	Ec.	Dis.
	22	44	26.2	II.	Ec.	Dis.
29	1	59		I.	Oc.	Re.
	3	5		IV.	Tr.	In.
	3	49		II.	Oc.	Re.
	7	23		IV.	Tr.	Eg.
	19	49		I.	Sh.	In.
	20	55		I.	Tr.	In.
	22	9		I.	Sh.	Eg.
	23	14		I.	Tr.	Eg.
30	17	5	28.1	I.*	Ec.	Dis.
	17	19		II.*	Sh.	In.
	18	12	40.2	III.*	Ec.	Dis.
	19	33		II.	Tr.	In.
	20	13		II.	Sh.	Eg.
	20	27		I.	Oc.	Re.
	21	41	26.2	III.	Ec.	Re.
	22	24		II.	Tr.	Eg.
	22	32		III.	Oc.	Dis.
31	2	1		III.	Oc.	Re.
	14	18		I.*	Sh.	In.
	15	22		I.*	Tr.	In.
	16	38		I.*	Sh.	Eg.
	17	41		I.*	Tr.	Eg.

Note.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * **Visible at Washington.**

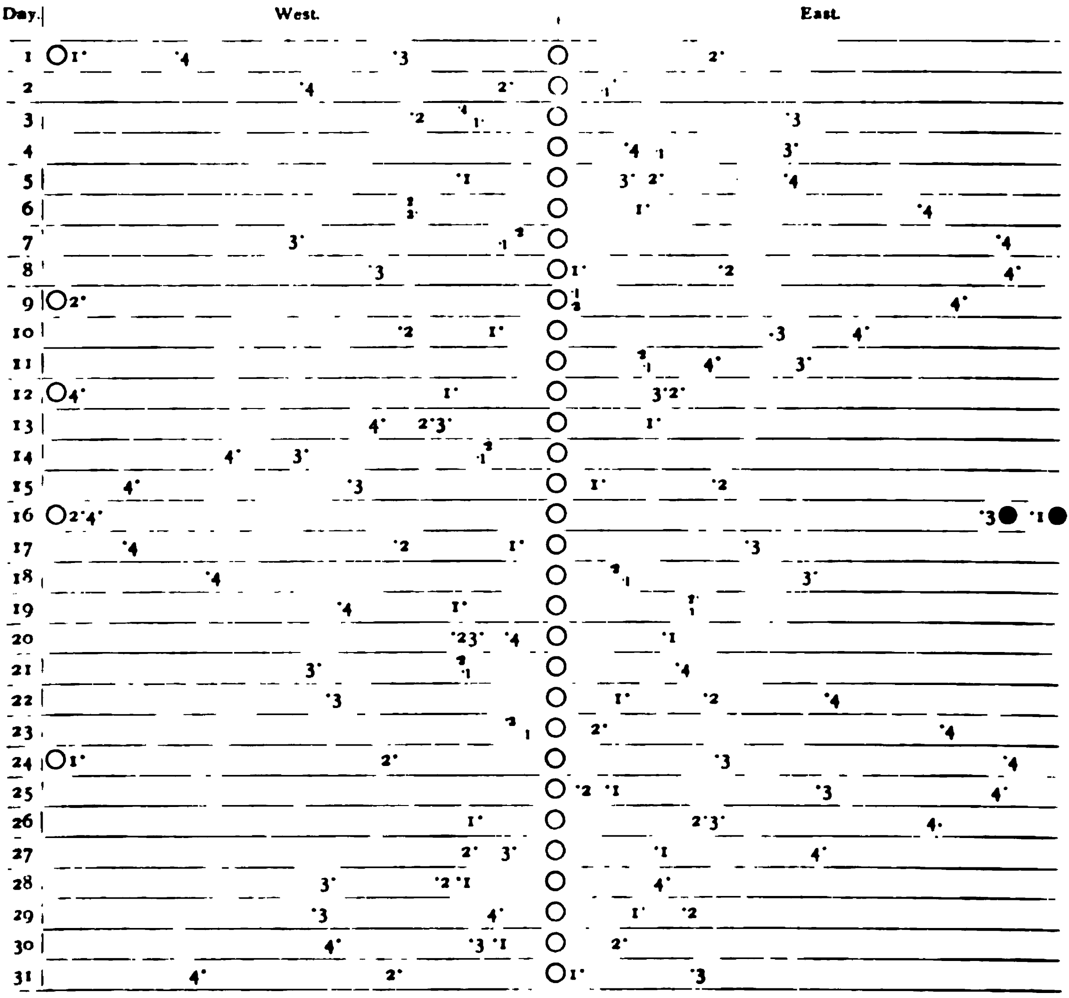
WASHINGTON MEAN TIME.

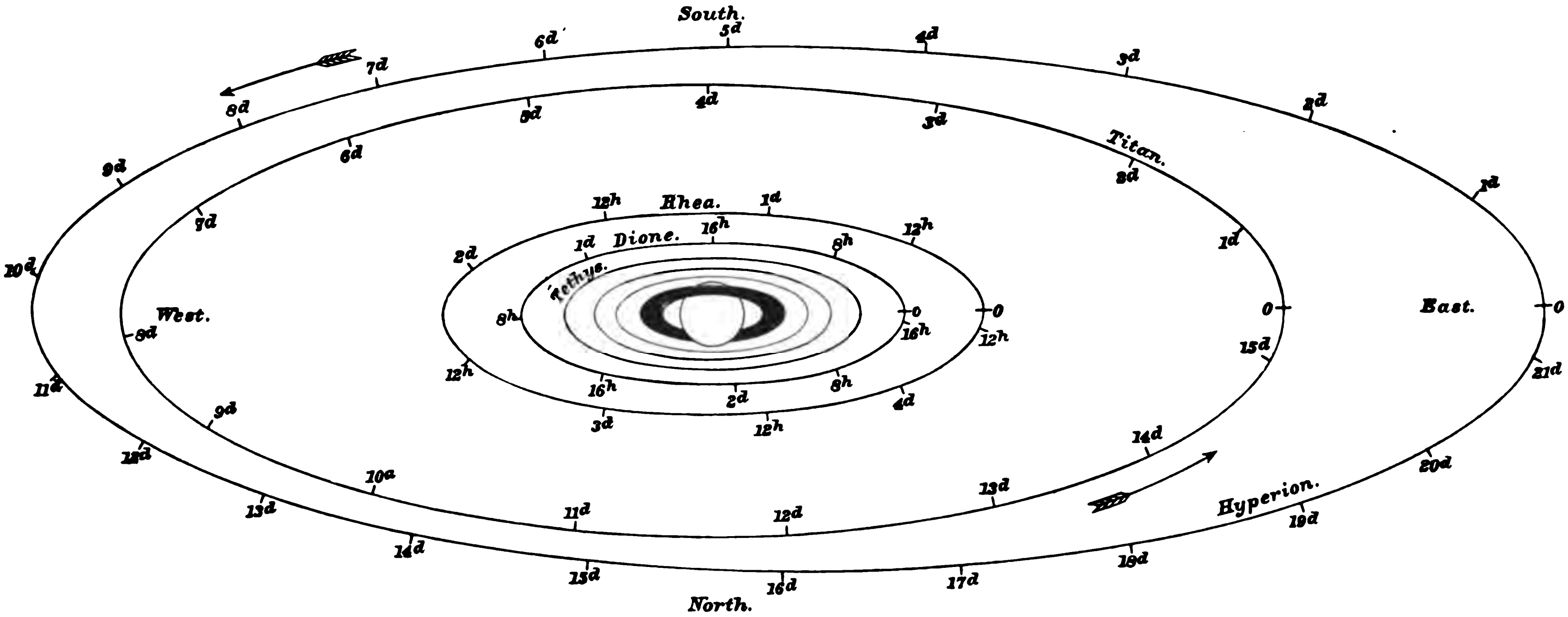
DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 15h 0m for an Inverting Telescope.





APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN,

AT OPPOSITION IN 1896,

AS SEEN IN AN INVERTING TELESCOPE.

Names of the Satellites.		Mean Synodic Periods.		
			d	h
I.	Mimas.	I.	0	22.6
II.	Enceladus.	II.	1	8.9
III.	Tethys.	III.	1	21.3
IV.	Dione.	IV.	2	17.7
V.	Rhea.	V.	4	12.4
VI.	Titan.	VI.	15	23.3
VII.	Hyperion.	VII.	21	7.8
VIII	Iapetus.	VIII	79	22.0

WASHINGTON MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "o" are those of the eastern elongation, as seen in an inverting telescope. The apparent positions of a satellite at any time may be marked on the diagram by counting around the orbit the interval in days and hours which has elapsed since the last east elongation. The times of these elongations may be found from the following tables. Mimas can be seen only within a few hours of each elongation: the time of every elongation visible at Washington is therefore given. The times of other elongations of any satellite in the same direction may be found by adding or subtracting any multiple of the period. For the three outer satellites the times of elongation and conjunction are given. The following abbreviations are used:—

E., East Elongation,
I., Inferior Conjunction (south of planet),
W., West Elongation,
S., Superior Conjunction (north of planet).

MIMAS.

Greatest Elongations Visible at Washington.

	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	9	18.3 W.	Feb.	28	17.2 W.	Apr.	1	16.7 W.	Apr.	27	14.6 E.	May	22	13.8 W.	June	18	10.3 E.
	10	16.9 W.		29	15.8 W.		2	15.3 W.		28	13.2 E.		23	12.4 W.		19	9.0 E.
	11	15.5 W.	Mar.	1	14.4 W.		3	13.9 W.		29	11.8 E.		24	11.0 W.		25	11.3 W.
	17	18.6 E.		2	13.0 W.		4	12.6 W.		30	10.4 E.		25	9.7 W.		26	9.9 W.
	18	17.2 E.		7	17.4 E.		5	11.2 W.	May	1	8.9 E.		26	8.3 W.		27	8.5 W.
	19	15.8 E.		8	16.0 E.		6	9.8 W.		4	16.1 W.		29	15.5 E.	July	3	11.6 E.
	25	18.9 W.		9	14.6 E.		9	16.9 E.		5	14.7 W.		30	14.1 E.		4	10.2 E.
	26	17.5 W.		10	13.2 E.		10	15.5 E.		6	13.3 W.		31	12.7 E.		5	8.8 E.
	27	16.1 W.		11	11.9 E.		11	14.1 E.		7	12.0 W.	June	1	11.3 E.		11	11.8 W.
Feb.	3	17.8 E.		15	17.6 W.		12	12.7 E.		8	10.6 W.		2	9.9 E.		12	10.5 W.
	4	16.4 E.		16	16.3 W.		13	11.3 E.		9	9.2 W.		3	8.6 E.		13	9.1 W.
	5	15.0 E.		17	14.9 W.		14	10.0 E.		10	7.8 W.		6	15.7 W.		14	7.7 W.
	11	18.1 W.		18	13.5 W.		18	15.7 W.		13	15.0 E.		7	14.3 W.		20	11.4 E.
	12	16.7 W.		19	12.1 W.		19	14.4 W.		14	13.6 E.		8	12.9 W.		21	10.0 E.
	13	15.3 W.		24	16.4 E.		20	13.0 W.		15	12.2 E.		9	11.5 W.		22	8.6 E.
	14	13.9 W.		25	15.0 E.		21	11.6 W.		16	10.8 E.		10	10.1 W.		29	10.3 W.
	20	16.9 E.		26	13.7 E.		22	10.2 W.		17	9.5 E.		11	8.7 W.		30	8.9 W.
	21	15.6 E.		27	12.3 E.		23	8.8 W.		18	8.1 E.		16	13.1 E.	Aug.	6	10.5 E.
	22	14.2 E.		28	10.9 E.		26	16.0 E.		21	15.2 W.		17	11.7 E.		7	9.1 E.
	23	12.8 E.															

ENCELADUS.

	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	6	3.6 E.	Jan.	19	20.6 E.	Feb.	2	13.5 E.	Feb.	16	6.4 E.	Feb.	29	23.2 E.	Mar.	14	16.1 E.
	7	12.5 E.		21	5.5 E.		3	22.4 E.		17	15.2 E.	Mar.	2	8.1 E.		16	1.0 E.
	8	21.4 E.		22	14.4 E.		5	7.3 E.		19	0.1 E.		3	16.9 E.		17	9.8 E.
	10	6.3 E.		23	23.3 E.		6	16.2 E.		20	9.0 E.		5	1.8 E.		18	18.7 E.
	11	15.2 E.		25	8.2 E.		8	1.0 E.		21	17.9 E.		6	10.7 E.		20	3.6 E.
	13	0.1 E.		26	17.0 E.		9	9.9 E.		23	2.8 E.		7	19.6 E.		21	12.4 E.
	14	9.0 E.		28	1.9 E.		10	18.8 E.		24	11.7 E.		9	4.5 E.		22	21.3 E.
	15	17.9 E.		29	10.8 E.		12	3.7 E.		25	20.6 E.		10	13.4 E.		24	6.2 E.
	17	2.7 E.		30	19.7 E.		13	12.6 E.		27	5.5 E.		11	22.3 E.		25	15.1 E.
	18	11.6 E.	Feb.	1	4.6 E.		14	21.5 E.		28	14.4 E.		13	7.2 E.		26	23.9 E.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ENCELADUS—(*Concluded.*)

d h	d h	d h	d h	d h	d h
Mar. 28 8.8 E.	Apr. 17 22.0 E.	May 8 11.1 E.	May 29 0.1 E.	June 18 13.4 E.	July 9 2.6 E.
29 17.7 E.	19 6.8 E.	9 20.0 E.	30 9.0 E.	19 22.3 E.	10 11.5 E.
31 2.5 E.	20 15.7 E.	11 4.9 E.	31 17.9 E.	21 7.2 E.	11 20.4 E.
Apr. 1 11.4 E.	22 0.6 E.	12 13.7 E.	June 2 2.8 E.	22 16.0 E.	13 5.3 E.
2 20.3 E.	23 9.5 E.	13 22.6 E.	3 11.7 E.	24 0.9 E.	14 14.2 E.
4 5.2 E.	24 18.4 E.	15 7.4 E.	4 20.6 E.	25 9.8 E.	15 23.1 E.
5 14.0 E.	26 3.3 E.	16 16.3 E.	6 5.5 E.	26 18.6 E.	17 7.9 E.
6 22.9 E.	27 12.1 E.	18 1.2 E.	7 14.4 E.	28 3.5 E.	18 16.8 E.
8 7.7 E.	28 21.0 E.	19 10.1 E.	8 23.3 E.	29 12.4 E.	20 1.7 E.
9 16.6 E.	30 5.9 E.	20 18.9 E.	10 8.2 E.	30 21.3 E.	21 10.6 E.
11 1.5 E.	May 1 14.7 E.	22 3.8 E.	11 17.0 E.	July 2 6.2 E.	22 19.5 E.
12 10.4 E.	2 23.6 E.	23 12.6 E.	13 1.9 E.	3 15.1 E.	24 4.4 E.
13 19.3 E.	4 8.4 E.	24 21.5 E.	14 10.8 E.	4 23.9 E.	25 13.3 E.
15 4.2 E.	5 17.3 E.	26 6.4 E.	15 19.7 E.	6 8.8 E.	26 22.2 E.
16 13.1 E.	7 2.2 E.	27 15.3 E.	17 4.5 E.	7 17.7 E.	28 7.1 E.

TETHYS.

d h	d h	d h	d h	d h	d h
Jan. 6 23.8 E.	Feb. 11 20.7 E.	Mar. 18 17.7 E.	Apr. 23 14.1 E.	May 29 10.8 E.	July 4 7.4 E.
8 21.1 E.	13 18.0 E.	20 15.0 E.	25 11.4 E.	31 8.1 E.	6 4.7 E.
10 18.4 E.	15 15.4 E.	22 12.3 E.	27 8.7 E.	June 2 5.4 E.	8 2.0 E.
12 15.7 E.	17 12.7 E.	24 9.6 E.	29 6.0 E.	4 2.7 E.	9 23.3 E.
14 13.0 E.	19 10.0 E.	26 6.9 E.	May 1 3.3 E.	6 0.0 E.	11 20.7 E.
16 10.3 E.	21 7.4 E.	28 4.1 E.	3 0.6 E.	7 21.2 E.	13 18.0 E.
18 7.6 E.	23 4.7 E.	30 1.4 E.	4 21.9 E.	9 18.5 E.	15 15.3 E.
20 4.9 E.	25 2.0 E.	31 22.7 E.	6 19.2 E.	11 15.7 E.	17 12.6 E.
22 2.3 E.	26 23.3 E.	Apr. 2 20.0 E.	8 16.5 E.	13 13.0 E.	19 9.8 E.
23 23.6 E.	28 20.7 E.	4 17.3 E.	10 13.8 E.	15 10.3 E.	21 7.1 E.
25 20.9 E.	Mar. 1 18.0 E.	6 14.6 E.	12 11.1 E.	17 7.7 E.	23 4.4 E.
27 18.2 E.	3 15.3 E.	8 11.9 E.	14 8.4 E.	19 5.0 E.	25 1.7 E.
29 15.5 E.	5 12.5 E.	10 9.1 E.	16 5.7 E.	21 2.3 E.	26 23.0 E.
31 12.8 E.	7 9.8 E.	12 6.4 E.	18 3.0 E.	22 23.6 E.	28 20.3 E.
Feb. 2 10.2 E.	9 7.1 E.	14 3.7 E.	20 0.3 E	24 20.9 E.	30 17.6 E.
4 7.5 E.	11 4.4 E.	16 1.0 E.	21 21.6 E.	26 18.2 E.	Aug. 1 14.9 E.
6 4.8 E.	13 1.7 E.	17 22.2 E.	23 18.9 E.	28 15.5 E.	3 12.2 E.
8 2.1 E.	14 23.0 E.	19 19.5 E.	25 16.2 E.	30 12.8 E.	5 9.5 E.
9 23.4 E.	16 20.4 E.	21 16.8 E.	27 13.5 E.	July 2 10.1 E.	7 6.8 E.

DIONE.

d h	d h	d h	d h	d h	d h
Jan. 8 11.3 E.	Feb. 10 7.8 E.	Mar. 14 4.1 E.	Apr. 15 23.9 E.	May 18 19.7 E.	June 20 15.6 E.
11 5.0 E.	13 1.5 E.	16 21.8 E.	18 17.5 E.	21 13.4 E.	23 9.2 E.
13 22.7 E.	15 19.2 E.	19 15.5 E.	21 11.1 E.	24 7.0 E.	26 2.9 E.
16 16.4 E.	18 12.9 E.	22 9.1 E.	24 4.7 E.	27 0.7 E.	28 20.6 E.
19 10.1 E.	21 6.6 E.	25 2.8 E.	26 22.4 E.	29 18.3 E.	July 1 14.3 E.
22 3.8 E.	24 0.3 E.	27 20.4 E.	29 16.1 E.	June 1 12.0 E.	4 8.0 E.
24 21.5 E.	26 18.0 E.	30 14.1 E.	May 2 9.7 E.	4 5.6 E.	7 1.7 E.
27 15.2 E.	29 11.7 E.	Apr. 2 7.8 E.	5 3.4 E.	6 23.2 E.	9 19.4 E.
30 8.9 E.	Mar. 3 5.4 E.	5 1.4 E.	7 21.0 E.	9 16.9 E.	12 13.1 E.
Feb. 2 2.7 E.	5 23.0 E.	7 19.1 E.	10 14.7 E.	12 10.5 E.	15 6.8 E.
4 20.4 E.	8 16.7 E.	10 12.7 E.	13 8.4 E.	15 4.2 E.	18 0.5 E.
7 14.1 E.	11 10.4 E.	13 6.3 E.	16 2.0 E.	17 21.9 E.	20 18.1 E.

RHEA.		TITAN.		HYPERION.	
d h	d h	d h	d h	d h	d h
Jan. 8 21.0 E.	Apr. 17 6.2 E.	Jan. 11 15.4 E.	Apr. 8 11.7 W.	Jan. 1 0.8 E.	Apr. 26 22.1 W.
13 9.5 E.	21 18.5 E.	15 13.5 I.	12 12.3 S.	7 4.1 I.	May 1 10.8 S.
17 22.0 E.	26 6.9 E.	19 17.6 W.	16 7.5 E.	11 23.2 W.	7 4.5 E.
22 10.6 E.	30 19.2 E.	23 19.2 S.	20 5.0 I.	16 11.4 S.	13 8.2 I.
26 23.1 E.	May 5 7.5 E.	27 15.2 E.	24 8.9 W.	22 5.4 E.	18 2.9 W.
31 11.6 E.	9 19.8 E.	31 13.0 I.	28 9.7 S.	28 8.8 I.	22 15.9 S.
Feb. 5 0.1 E.	14 8.1 E.	Feb. 4 17.1 W.	May 2 4.9 E.	Feb. 2 3.8 W.	28 9.5 E.
9 12.6 E.	18 20.4 E.	8 18.7 S.	6 2.3 I.	6 16.2 S.	June 3 13.6 I.
14 1.0 E.	23 8.7 E.	12 14.6 E.	10 6.3 W.	12 10.0 E.	8 8.4 W.
18 13.4 E.	27 21.0 E.	16 12.5 I.	14 7.2 S.	18 13.5 I.	12 21.1 S.
23 1.8 E.	June 1 9.4 E.	20 16.6 W.	18 2.3 E.	23 8.5 W.	18 14.9 E.
27 14.2 E.	5 21.7 E.	24 18.2 S.	21 23.4 I.	27 21.0 S.	24 18.8 I.
Mar. 3 2.6 E.	10 10.1 E.	28 13.5 E.	26 3.6 W.	Mar. 4 14.5 E.	29 13.8 W.
7 15.0 E.	14 22.4 E.	Mar. 3 10.7 I.	30 4.6 S.	10 18.3 I.	July 4 2.6 S.
12 3.4 E.	19 10.8 E.	7 14.6 W.	June 2 23.6 E.	15 13.2 W.	9 20.5 E.
16 15.7 E.	23 23.1 E.	11 16.5 S.	6 20.4 I.	20 1.8 S.	16 0.4 I.
21 4.0 E.	28 11.5 E.	15 12.1 E.	11 0.7 W.	25 19.3 E.	20 19.5 W.
25 16.4 E.	July 2 23.9 E.	19 9.6 I.	15 1.4 S.	31 23.0 I.	25 8.0 S.
30 4.8 E.	7 12.2 E.	23 13.6 W.	18 20.4 E.	Apr. 5 17.8 W.	31 2.0 E.
Apr. 3 17.1 E.	12 0.6 E.	27 14.4 S.	22 17.3 I.	10 6.4 S.	Aug. 6 5.6 I.
8 5.5 E.	16 13.0 E.	31 10.3 E.	26 21.4 W.	15 23.7 E.	11 0.7 W.
12 17.9 E.	21 1.4 E.	Apr. 4 7.7 I.	30 22.5 S.	22 3.2 I.	15 13.1 S.

IAPETUS.

d h	d h	d h	d h	d h	d h
Jan. 8 3.0 E.	Feb. 15 7.3 W.	Mar. 26 12.2 E.	May 3 16.9 W.	June 12 23.6 E.	July 21 4.4 W.
26 1.2 I.	Mar. 6 10.7 S.	Apr. 13 10.8 I.	23 20.7 S.	30 22.4 I.	Aug. 10 8.4 S.

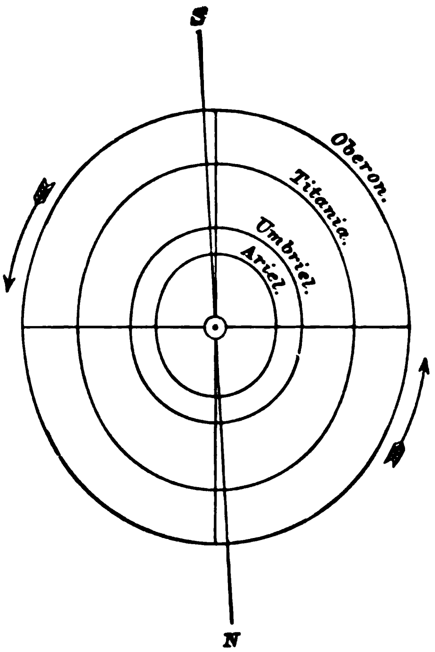
THE APPARENT ELEMENTS OF SATURN'S RINGS.

Greenwich Mean Noon.	*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-Minor Axis to Circle of Declination from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on the— Equator.	*u′* Ecliptic.
	″	″	° ′	° ′	° ′	° ′	° ′
Jan. 1	36.04	13.24	+1 0.9	+21 33.6	+20 8.5	278 7.0	235 44.0
21	37.09	13.83	+1 12.5	+21 53.2	+20 19.6	279 39.3	237 16.4
Feb. 10	38.34	14.39	+1 19.6	+22 2.7	+20 31.1	280 35.9	238 13.1
Mar. 1	39.65	14.87	+1 21.4	+22 1.8	+20 42.3	280 50.8	238 28.0
21	40.86	15.21	+1 18.0	+21 51.3	+20 53.4	280 23.4	238 0.7
Apr. 10	41.76	15.34	+1 10.0	+21 33.0	+21 4.4	279 19.5	236 57.0
30	42.19	15.24	+0 59.1	+21 10.0	+21 15.3	277 52.9	235 30.4
May 20	42.06	14.92	+0 47.6	+20 46.8	+21 25.9	276 20.8	233 58.4
June 9	41.41	14.48	+0 37.7	+20 28.2	+21 36.4	275 1.8	232 39.5
29	40.35	14.01	+0 31.3	+20 18.5	+21 46.7	274 10.9	231 48.6
July 19	39.09	13.58	+0 29.5	+20 19.8	+21 56.9	273 56.6	231 34.5
Aug. 8	37.79	13.26	+0 32.7	+20 32.6	+22 7.0	274 21.9	231 59.8
28	36.60	13.07	+0 40.6	+20 55.4	+22 16.8	275 24.8	233 2.8
Sept. 17	35.61	13.01	+0 52.7	+21 25.6	+22 26.4	277 0.4	234 38.5
Oct. 7	34.89	13.07	+1 8.0	+22 0.3	+22 36.1	279 2.3	236 40.5
27	34.46	13.24	+1 25.6	+22 36.2	+22 45.4	281 22.4	239 0.7
Nov. 16	34.34	13.52	+1 44.5	+23 10.6	+22 54.6	283 52.3	241 30.6
Dec. 6	34.55	13.88	+2 3.2	+23 41.1	+23 3.7	286 22.2	244 0.6
26	35.08	14.32	+2 20.5	+24 5.8	+23 12.7	288 42.2	246 20.7
31	35.26	14.45	+2 24.5	+24 11.0	+23 14.9	289 14.5	246 53.0

The factor to be multiplied by *a* and *b* to obtain the axes of—

The inner ellipse of the outer ring = 0.8801, log factor = 9.9445
The outer ellipse of the inner ring = 0.8599, log factor = 9.9344
The inner ellipse of the inner ring = 0.6650, log factor = 9.8228
The inner ellipse of the dusky ring = 0.5486, log factor = 9.7392

NOTE.—The positive sign of *l* indicates that the visible surface of the ring is the northern one.



Date.	Position Angle.	App. Distances. Ariel.	App. Distances. Umbriel.
	°	"	"
Feb. 12,	-5.6	14.1	19.7
May 14,	-3.5	14.9	20.8
Aug. 10,	-1.8	14.1	19.7

Date.	Position Angle.	App. Distances. Titania.	App. Distances. Oberon.
	°	"	"
Feb. 12,	-5.6	32.3	43.1
May 14,	-3.5	34.1	45.5
Aug. 10,	-1.8	32.3	43.2

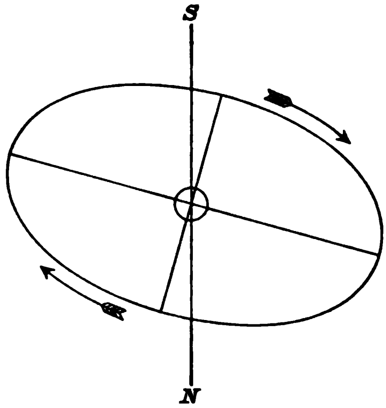
APPARENT ORBITS OF THE SATELLITES OF URANUS IN 1896,
AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ARIEL.						UMBRIEL.						TITANIA.						OBERON.			
North.			South.			North.			South.			North.			South.			North and South.			
	d	h		d	h		d	h		d	h		d	h		d	h		d	h	
Feb.	4	16.2	Feb.	8	10.9	Feb.	4	16.0	Feb.	6	17.7	Feb.	9	18.9	Feb.	5	10.4	Feb.	11	22.1	S.
	12	5.6		16	0.4		12	23.0		15	0.7		18	11.9		14	3.4		18	15.8	N.
	19	19.1		23	13.9		21	5.9		23	7.6		27	5.0		22	20.5		25	9.4	S.
	27	8.6	Mar.	2	3.3		29	12.8	Mar.	2	14.6	Mar.	6	22.0	Mar.	2	13.5	Mar.	3	3.1	N.
Mar.	5	22.1		9	16.8	Mar.	8	19.8		10	21.5		15	15.0		11	6.5		9	20.7	S.
	13	11.6		17	6.3		17	2.7		19	4.5		24	8.0		19	23.5		16	14.4	N.
	21	1.0		24	19.8		25	9.7		27	11.4	Apr.	2	1.0		28	16.5		23	8.0	S.
	28	14.5	Apr.	1	9.3	Apr.	2	16.6	Apr.	4	18.4		10	18.1	Apr.	6	9.6		30	1.7	N.
Apr.	5	4.0		8	22.7		10	23.6		13	1.3		19	11.1		15	2.6	Apr.	5	19.3	S.
	12	17.5		16	12.2		19	6.5		21	8.3		28	4.1		23	19.6		12	13.0	N.
	20	7.0		24	1.7		27	13.5		29	15.2	May	6	21.1	May	2	12.6		19	6.6	S.
	27	20.5	May	1	15.2	May	5	20.4	May	7	22.2		15	14.1		11	5.6		26	0.3	N.
May	5	9.9		9	4.7		14	3.4		16	5.1		24	7.2		19	22.7	May	2	17.9	S.
	12	23.4		16	18.2		22	10.3		24	12.1	June	2	0.2		28	15.7		9	11.6	N.
	20	12.9		24	7.6		30	17.3	June	1	19.0		10	17.2	June	6	8.7		16	5.2	S.
	28	2.4		31	21.1	June	8	0.2		10	2.0		19	10.3		15	1.7		22	22.9	N.
June	4	15.9	June	8	10.6		16	7.2		18	8.9		28	3.3		23	18.7		29	16.6	S.
	12	5.4		16	0.1		24	14.1		26	15.9	July	6	20.3	July	2	11.8	June	5	10.2	N.
	19	18.9		23	13.6	July	2	21.1	July	4	22.8		15	13.4		11	4.8		12	3.9	S.
	27	8.4	July	1	3.1		11	4.0		13	5.8		24	6.4		19	21.8		18	21.6	N.
July	4	21.9		8	16.6		19	11.0		21	12.7	Aug.	1	23.4		28	14.9		25	15.2	S.
	12	11.4		16	6.1		27	17.9		29	19.7		10	16.4	Aug.	6	7.9	July	2	8.9	N.
	20	0.9		23	19.6	Aug.	5	0.9	Aug.	7	2.6		19	9.5		15	0.9		9	2.5	S.
	27	14.4		31	9.1		13	7.9		15	9.6		28	2.5		23	18.0		15	20.2	N.
Aug.	4	3.9	Aug.	7	22.6		21	14.8		23	16.6	Sept.	5	19.5	Sept.	1	11.0		22	13.8	S.

	d	h		d	h
Period of Ariel,	2	12.489	Period of Titania,	8	16.942
Period of Umbriel,	4	3.460	Period of Oberon,	13	11.119

NOTE.—For Ariel only every third elongation is given, and for Umbriel every alternate one. The intermediate ones may be found by adding multiples of the period of the satellite.



Date.	Position Angle.	Apparent Distance.
	°	"
Mar. 11,	250.4	16.3
Sept. 15,	255.7	16.4
Dec. 12,	254.3	16.9

APPARENT ORBIT OF THE SATELLITE OF NEPTUNE IN 1896, AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

East.			West.			East.			West.			East.			West.		
	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	3	11.6	Jan.	6	10.1	Mar.	14	0.8	Mar.	16	23.3	Oct.	29	3.5	Nov.	1	2.0
	9	8.7		12	7.1		19	21.9		22	20.4	Nov.	4	0.6		6	23.1
	15	5.8		18	4.2	Aug.	31	8.6	Sept.	3	7.2		9	21.7		12	20.2
	21	2.9		24	1.3	Sept.	6	5.7		9	4.3		15	18.7		18	17.3
	27	0.0		29	22.4		12	2.8		15	1.4		21	15.8		24	14.4
Feb.	1	21.1	Feb.	4	19.5		17	23.9		20	22.4		27	12.9		30	11.5
	7	18.2		10	16.6		23	21.0		26	19.5	Dec.	3	10.0	Dec.	6	8.5
	13	15.3		16	13.8		29	18.1	Oct.	2	16.6		9	7.1		12	5.6
	19	12.4		22	10.9	Oct.	5	15.2		8	13.7		15	4.2		18	2.7
	25	9.5		28	8.0		11	12.2		14	10.8		21	1.3		23	23.8
Mar.	2	6.6	Mar.	5	5.1		17	9.3		20	7.9		26	22.3		29	20.9
	8	3.7		11	2.2		23	6.4		26	4.9	Jan.	1	19.4	Jan.	4	18.0

The above times are those of each passage of the satellite through the apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, remembering that the radius vector of the satellite describes equal areas in equal times.

Period of the satellite of Neptune, $5^{d}\,21^{h}.045$.

Note.—In the preceding diagrams the central circle represents the planet and is on the same scale as the orbits.

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m			°	′
Jan.	1	1	–	⊕	in Perihelion.		
	1	20	–	♀	Greatest Hel. Lat. N.		
	1	23	56	☌ ♃ ☽	♃—	1	53
	4	15	–	☿	Greatest Hel. Lat S.		
	9	6	31	☌ ♄ ☽	♄+	7	31
	9	16	18	☌ ♅ ☽	♅+	5	34
	10	18	6	☌ ♀ ☽	♀+	7	36
	11	18	5	☌ ♂ ☽	♂+	4	35
	15	14	28	☌ ☿ ☽	☿+	0	32
	23	12	–	☿	Greatest elong. E.	18	31
	23	17	–	☿	in ☊		
	23	20	–	☍ ♃ ☉			
	25	20	8	☌ ♆ ☽	♆—	6	36
	28	7	–	☿	in Perihelion.		
	29	4	11	☌ ♃ ☽	♃—	2	4
	29	14	–	☿	Stationary.		
Feb.	5	15	39	☌ ♄ ☽	♄+	7	46
	5	23	10	☌ ♅ ☽	♅+	5	40
	7	7	–	□ ♄ ☉			
	7	15	–	☿	Greatest Hel. Lat. N.		
	8	1	–	☌ ☿ ☉	Inferior.		
	9	3	–	☌ ♀ ♂	♀+	1	38
	9	14	16	☌ ♂ ☽	♂+	3	27
	9	14	44	☌ ♀ ☽	♀+	5	3
	12	0	57	☌ ☿ ☽	☿+	5	41
	12	21	–	□ ♅ ☉			
	13	–	–	☉	Ann. eclip., invis. at Wash.		
	20	1	–	☿	Stationary.		
	22	4	55	☌ ♆ ☽	♆—	6	39
	24	4	–	♆	Stationary.		
	25	10	3	☌ ♃ ☽	♃—	2	18
	26	19	–	♄	Stationary.		
	26	22	–	♀	in ☋		
	27	4	–	♅	Stationary.		
	28	–	–	☽	part. eclip., invis. at Wash.		
Mar.	2	1	–	☿	in ☋		
	3	22	10.5	☌ ♄ ☽	♄+	7	54
	4	6	11	☌ ♅ ☽	♅+	5	42
	4	15	–	□ ♆ ☉			
	5	3	–	☿	Greatest elong. W.	27	20
	9	13	48	☌ ♂ ☽	♂+	1	37
	10	21	11	☌ ♀ ☽	♀+	0	35
	11	7	29	☌ ☿ ☽	☿—	0	42
	12	6	–	☿	in Aphelion.		
	13	20	–	☌ ♀ μ	Capricorni . . ♀—	0	6
	19	9	–	☉	enters ♈, Spring com.		
	20	12	28	☌ ♆ ☽	♆—	6	33
	23	17	37	☌ ♃ ☽	♃—	2	19
	24	7	–	♃	Stationary.		
	31	6	6	☌ ♄ ☽	♄+	7	53
	31	14	29	☌ ♅ ☽	♅+	5	36
Apr.	1	8	–	♀	in Aphelion.		
Apr.	1	16	–	☿	Greatest Hel. Lat. S.		
	7	17	11	☌ ♂ ☽	♂—	0	53
	10	10	49	☌ ♀ ☽	♀—	4	12
	12	2	55	☌ ☿ ☽	☿—	5	30
	16	19	14	☌ ♆ ☽	♆—	6	21
	17	12	–	☌ ☿ ☉	Superior.		
	19	0	–	□ ♃ ☉			
	20	2	52	☌ ♃ ☽	♃—	2	2
	20	16	–	☿	in ☊		
	23	18	–	♀	Greatest Hel. Lat. S.		
	25	6	–	☿	in Perihelion.		
	27	14	0	☌ ♄ ☽	♄+	7	48
	27	23	30	☌ ♅ ☽	♅+	5	29
May	3	11	–	☌ ♀ ο	Piscium . . . ♀+	0	10
	5	4	–	☍ ♄ ☉			
	5	14	–	☿	Greatest Hel. Lat. N.		
	6	23	3	☌ ♂ ☽	♂—	3	37
	10	21	14	☌ ♀ ☽	♀—	6	19
	12	1	–	☍ ♅ ☉			
	14	0	41	☌ ☿ ☽	☿—	2	24
	14	2	27	☌ ♆ ☽	♆—	6	11
	14	23	–	☌ ☿ ♆	☿+	3	45
	15	21	–	☿	Greatest elong. E.	22	9
	17	14	10	☌ ♃ ☽	♃—	1	34
	18	17	–	♂	Greatest Hel. Lat. S.		
	24	20	54	☌ ♄ ☽	♄+	7	46
	25	7	52	☌ ♅ ☽	♅+	5	28
	28	20	–	☿	Stationary.		
	29	1	–	☿	in ☋		
June	5	4	29	☌ ♂ ☽	♂—	5	48
	7	10	–	☌ ♆ ☉			
	8	6	–	☿	in Aphelion.		
	9	20	–	☌ ☿ ☉	Inferior.		
	10	1	2	☌ ♀ ☽	♀—	5	14
	10	11	2	☌ ♆ ☽	♆—	6	5
	10	14	32	☌ ☿ ☽	☿—	8	3
	11	23	–	♂	in Perihelion.		
	14	4	4	☌ ♃ ☽	♃—	0	59
	14	7	–	☌ ☿ ♆	☿—	2	42
	14	14	5	☌ ☿ ♀	☿—	3	57
	14	17	–	☌ ♀ ♆	♀+	1	12
	19	1	–	♀	in ☊		
	20	5	–	☉	enters ♋, Summer com.		
	21	2	30	☌ ♄ ☽	♄+	7	49
	21	14	36	☌ ♅ ☽	♅+	5	34
	21	17	–	☿	Stationary.		
	28	15	–	☿	Greatest Hel. Lat. S.		
	29	14	–	☌ ☿ ♆	☿—	2	20
July	3	5	–	⊕	in Aphelion.		
	3	11	–	☿	Greatest elong. W.	21	25
	4	6	50	☌ ♂ ☽	♂—	6	56
	7	21	0	☌ ♆ ☽	♆—	6	6

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m			°	′
July	8	11	17	☌ ☿ ☽	.... ☿ −	6	22
	8	20	-	☌ ♀ ☉	Superior.		
	10	2	28	☌ ♀ ☽	.... ♀ −	2	17
	11	20	48	☌ ♃ ☽	.... ♃ −	0	22
	13	5	-	☌ ☿ μ	Geminorum. . ☿ −	0	7
	15	23	-	♄	Stationary.		
	17	15	-	☿	in ☊		
	18	7	43	☌ ♄ ☽	.... ♄ +	7	50
	18	19	59	☌ ⛢ ☽	.... ⛢ +	5	42
	22	5	-	☿	in Perihelion.		
	22	16	-	♀	in Perihelion.		
	28	11	-	⛢	Stationary.		
	28	16	-	☌ ☿ η	Cancri . . . . ☿ +	0	0
	31	1	-	☌ ☿ ☉	Superior.		
Aug.	1	14	-	☿	Greatest Hel. Lat. N.		
	2	4	31	☌ ♂ ☽	.... ♂ −	7	0
	2	6	-	☌ ♀ ♃	.... ♀ +	0	41
	4	0	-	□ ♄ ☉			
	4	7	31	☌ ♆ ☽	.... ♆ −	6	10
	4	13	-	☌ ☿ ♃	.... ☿ +	1	6
	7	21	-	☌ ☿ ♀	.... ☿ +	0	18
	8	-	-	☉	eclipsed, invis. at Wash.		
	8	16	0	☌ ♃ ☽	.... ♃ +	0	16
	9	4	28	☌ ♀ ☽	.... ♀ +	1	45
	9	6	9	☌ ☿ ☽	.... ☿ +	2	3
	11	15	-	☌ ♃ ☉			
	12	3	-	□ ⛢ ☉			
	13	13	-	♀	Greatest Hel. Lat. N.		
	14	14	21	☌ ♄ ☽	.... ♄ +	7	47
	15	1	35	☌ ⛢ ☽	.... ⛢ +	5	45
	22	-	-	☽	partly eclip., vis. at Wash.		
	25	0	-	☿	in ☋		
	30	20	28	☌ ♂ ☽	.... ♂ −	6	15
	31	13	-	□ ♂ ☉			
	31	17	12	☌ ♆ ☽	.... ♆ −	6	9
Sept.	4	5	-	☿	in Aphelion.		
	5	12	39	☌ ♃ ☽	.... ♃ +	0	55
	8	4	38	☌ ♀ ☽	.... ♀ +	4	59
	8	18	55	☌ ☿ ☽	.... ☿ +	2	5
	11	0	3	☌ ♄ ☽	.... ♄ +	7	38
	11	9	16	☌ ⛢ ☽	.... ⛢ +	5	41
	11	21	-	□ ♆ ☉			
	12	17	-	☿	Greatest elong. E.	26	43
	18	23	-	☌ ♃ α	Leonis . . . . ♃ +	0	20
	21	20	-	☉	enters ♎, Autumn com.		
	22	3	-	♆	Stationary.		
	23	13	-	☌ ♂ ♆	.... ♂ +	0	51
	24	2	-	☌ ☿ ♀	.... ☿ −	4	38
	24	14	-	☿	Greatest Hel. Lat. S.		
	25	17	-	☿	Stationary.		
	28	0	53	☌ ♆ ☽	.... ♆ −	6	2
	28	4	19	☌ ♂ ☽	.... ♂ −	5	0
Oct.	3	9	4	☌ ♃ ☽	.... ♃ +	1	40
	6	12	24	☌ ☿ ☽	.... ☿ +	2	3
	8	0	55	☌ ♀ ☽	.... ♀ +	5	18
	8	4	-	☌ ☿ ☉	Inferior.		
	8	13	17	☌ ♄ ☽	.... ♄ +	7	25
	8	15	-	♀	in ☋		
	8	20	5	☌ ⛢ ☽	.... ⛢ +	5	32
	13	2	-	♂	in ☊		
	13	14	-	☿	in ☊		
	15	3	-	☌ ♀ ♄	.... ♀ −	2	25
	16	12	-	☿	Stationary.		
	18	5	-	☿	in Perihelion.		
	18	14	-	☌ ♀ ⛢	.... ♀ −	0	43
	23	19	-	☿	Greatest elong. W.	18	26
	25	6	23	☌ ♆ ☽	.... ♆ −	5	51
	25	23	20	☌ ♂ ☽	.... ♂ −	3	29
	28	12	-	☿	Greatest Hel. Lat. N.		
	31	3	0	☌ ♃ ☽	.... ♃ +	2	25
Nov.	1	13	-	♂	Stationary.		
	3	18	37	☌ ☿ ☽	.... ☿ +	6	59
	5	4	59	☌ ♄ ☽	.... ♄ +	7	14
	5	9	19	☌ ⛢ ☽	.... ⛢ +	5	23
	6	20	28	☌ ♀ ☽	.... ♀ +	3	10
	11	23	-	♀	in Aphelion.		
	12	21	-	☌ ♄ ☉			
	15	22	-	☌ ⛢ ☉			
	19	3	-	☌ ☿ ♄	.... ☿ −	1	50
	20	12	-	☌ ☿ ⛢	.... ☿ −	0	13
	20	23	-	☿	in ☋		
	21	10	58	☌ ♆ ☽	.... ♆ −	5	44
	21	23	48	☌ ♂ ☽	.... ♂ −	2	10
	27	16	18	☌ ♃ ☽	.... ♃ +	3	8
	28	1	-	☌ ☿ ☉	Superior.		
	30	5	-	□ ♃ ☉			
Dec.	1	4	-	☿	in Aphelion.		
	2	20	56	☌ ♄ ☽	.... ♄ +	7	11
	2	22	55	☌ ⛢ ☽	.... ⛢ +	5	21
	4	7	16	☌ ☿ ☽	.... ☿ +	3	2
	4	11	-	♀	Greatest Hel. Lat. S.		
	6	20	35	☌ ♀ ☽	.... ♀ −	0	3
	9	16	-	☍ ♆ ☉			
	10	12	-	☍ ♂ ☉			
	18	12	5	☌ ♂ ☽	.... ♂ −	1	34
	18	16	20	☌ ♆ ☽	.... ♆ −	5	45
	20	14	-	☉	enters ♑, Winter com.		
	21	12	-	☿	Greatest Hel. Lat. S.		
	25	0	10	☌ ♃ ☽	.... ♃ +	3	38
	25	8	-	♃	Stationary.		
	27	20	-	☌ ♄ ⛢	.... ♄ +	1	49
	30	10	28	☌ ⛢ ☽	.... ⛢ +	5	25
	30	10	40	☌ ♄ ☽	.... ♄ +	7	15
	30	19	-	⊕	in Perihelion.		

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude.	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Åbo	+60 26 56.8	− 10 2.1	9.998887	− 6 37 18.45	− 1 29 6.41
Adelaide	−34 55 33.8	+ 10 56.8	9.999520	−14 22 32.34	− 9 14 20.30
Albany	+42 39 49.5	− 11 38.0	9.999326	− 0 13 12.87	+ 4 54 59.17
Alfred	+42 15 19.8	− 11 37.0	9.999337	+ 0 2 55.00	+ 5 11 7.04
Algier (*Old Obs.*)	+36 44 0	− 11 10.8	9.999476	− 5 20 28.8	− 0 12 16.8
Algier (*New Obs.*)	+36 47 50	− 11 11.3	9.999474	− 5 20 20.59	− 0 12 8.55
Allegheny	+40 27 41.6	− 11 31.3	9.999383	+ 0 11 50.89	+ 5 20 2.93
Altona	+53 32 45.3	− 11 10.2	9.999049	− 5 47 58.39	− 0 39 46.35
Amherst	+42 22 17.1	− 11 37.3	9.999334	− 0 18 7.37	+ 4 50 4.67
Annapolis	+38 58 53.5	− 11 24.5	9.999420	− 0 2 15.55	+ 5 5 56.49
Ann Arbor	+42 16 48.0	− 11 37.0	9.999336	+ 0 26 43.15	+ 5 34 55.19
Arequipa (*Harvard*)	−16 24	+ 6 18.4	9.999884	− 0 22 42	+ 4 45 30
Armagh	+54 21 12.7	− 11 4.2	9.999029	− 4 41 36.6	+ 0 26 35.4
Athens	+37 58 20.0	− 11 18.9	9.999445	− 6 43 7.7	− 1 34 55.7
Beloit	+42 30 9.0	− 11 37.6	9.999331	+ 0 47 55.26	+ 5 56 7.30
Bergen	+60 23 54	− 10 2.7	9.998888	− 5 29 24.8	− 0 21 12.8
Berkeley	+37 52 21.7	− 11 18.3	9.999448	+ 3 0 50.33	+ 8 9 2.37
Berlin (*Urania*)	+52 31 31.8	− 11 17.0	9.999075	− 6 1 39.60	− 0 53 27.56
Berlin	+52 30 16.7	− 11 17.1	9.999075	− 6 1 46.95	− 0 53 34.91
Berne	+46 57 8.7	− 11 39.0	9.999216	− 5 37 57.7	− 0 29 45.7
Besançon	+47 14 59.0	− 11 38.5	9.999208	− 5 32 9.24	− 0 23 57.20
Bethlehem	+40 36 23.4	− 11 31.9	9.999379	− 0 6 40.19	+ 5 1 31.85
Birr Castle	+53 5 47.0	− 11 13.3	9.999060	− 4 36 31.1	+ 0 31 40.9
Bogota	+ 4 35 48	− 1 51.5	9.999991	− 0 11 13	+ 4 56 59
Bologna	+44 29 47.0	− 11 40.3	9.999279	− 5 53 36.9	− 0 45 24.9
Bombay	+18 53 45	− 7 8.1	9.999847	− 9 59 27.7	− 4 51 15.7
Bonn	+50 43 45.0	− 11 26.9	9.999120	− 5 36 35.33	− 0 28 23.29
Bordeaux	+44 50 6.7	− 11 40.4	9.999271	− 5 6 6.60	+ 0 2 5.44
Bothkamp	+54 12 9.6	− 11 5.3	9.999033	− 5 48 43.2	− 0 40 31.2
Breslau	+51 6 56.5	− 11 25.0	9.999110	− 6 16 20.88	− 1 8 8.84
Brisbane	−27 28 0.0	+ 9 32.2	9.999689	−15 20 17.8	−10 12 5.8
Brussels (*Uccle*)	+50 47 53	− 11 26.6	9.999118	− 5 25 38.2	− 0 17 26.2
Brussels	+50 51 10.7	− 11 26.3	9.999117	− 5 25 40.7	− 0 17 28.7
Budapest	+47 29 34.7	− 11 38.0	9.999202	− 6 24 27.4	− 1 16 15.4
Cairo	+30 4 38.2	− 10 6.5	9.999632	− 7 13 20.95	− 2 5 8.91
Cambridge (*England*)	+52 12 51.6	− 11 18.9	9.999082	− 5 8 34.79	− 0 0 22.75
Cambridge (*Mass.*)	+42 22 47.6	− 11 37.3	9.999334	− 0 23 41.05	+ 4 44 30.99
Cape of Good Hope	−33 56 3.4	+ 10 48.0	9.999543	− 6 22 6.78	− 1 13 54.74
Catania	+37 30	− 11 16.0	9.999457	− 6 7 52	− 0 59 40
Chapultepec	+19 25 17.5	− 7 18.2	9.999838	+ 1 28 26.20	+ 6 36 38.24
Charkow	+50 0 10.2	− 11 30.2	9.999138	− 7 33 6.7	− 2 24 54.7
Charlottesville	+38 2 1.2	− 11 19.3	9.999444	+ 0 5 53.18	+ 5 14 5.22

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude.	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Chicago (*Old Obs.*)	+41 50 1.0	− 11 35.9	9.999348	+ 0 42 14.69	+ 5 50 26.73
Christiania	+59 54 43.7	− 10 8.7	9.998899	− 5 51 5.89	− 0 42 53.85
Cincinnati (*New Obs.*)	+39 8 19.5	− 11 25.4	9.999416	+ 0 29 29.25	+ 5 37 41.29
Cincinnati (*Old Obs.*)	+39 6 26.5	− 11 25.2	9.999417	+ 0 29 47.01	+ 5 37 59.05
Clinton	+43 3 17.0	− 11 38.7	9.999316	− 0 6 34.65	+ 5 1 37.39
Coimbra	+40 12 25.8	− 11 30.3	9.999389	− 4 34 37.9	+ 0 33 34.1
Columbia (*Missouri*)	+38 56 51.6	− 11 24.4	9.999421	+ 1 1 6.18	+ 6 9 18.22
Copenhagen	+55 41 12.9	− 10 53.1	9.998997	− 5 58 30.96	− 0 50 18.92
Cordoba	−31 25 15.5	+ 10 22.2	9.999602	− 0 51 23.8	+ 4 16 48.2
Cracow	+50 3 51.9	− 11 29.9	9.999137	− 6 28 2.41	− 1 19 50.37
Dantzig	+54 21 18.0	− 11 4.1	9.999029	− 6 22 51.6	− 1 14 39.6
Denver	+39 40 36.4	− 11 27.9	9.999402	+ 1 51 35.59	+ 6 59 47.63
Dorpat	+58 22 47.1	− 10 26.4	9.998934	− 6 55 5.5	− 1 46 53.5
Dresden	+51 2 16.8	− 11 25.4	9.999112	− 6 3 6.88	− 0 54 54.84
Dublin	+53 23 13	− 11 11.3	9.999053	− 4 42 50.9	+ 0 25 21.1
Dun Echt	+57 9 36	− 10 39.2	9.998962	− 4 58 32.0	+ 0 9 40.0
Durham	+54 46 6.2	− 11 0.9	9.999019	− 5 1 52.2	+ 0 6 19.8
Düsseldorf	+51 12 25	− 11 24.6	9.999108	− 5 35 17.5	− 0 27 5.5
Edinburgh	+55 57 23.2	− 10 50.7	9.998991	− 4 55 28.99	+ 0 12 43.05
Evanston (*Dearborn*)	+42 3 33.4	− 11 36.5	9.999342	+ 0 42 30.3	+ 5 50 42.3
Florence (*Reale Museo*)	+43 46 4.1	− 11 39.7	9.999298	− 5 53 13.5	− 0 45 1.5
Florence (*Arcetri*)	+43 45 14.4	− 11 39.7	9.999298	− 5 53 15.15	− 0 45 3.11
Geneva	+46 11 58.8	− 11 39.9	9.999236	− 5 32 48.81	− 0 24 36.77
Genoa	+44 25 9.3	− 11 40.2	9.999281	− 5 43 53.4	− 0 35 41.4
Georgetown	+38 54 25.8	− 11 24.2	9.999422	+ 0 0 6.20	+ 5 8 18.24
Glasgow (*Missouri*)	+39 13 45.6	− 11 25.8	9.999414	+ 1 3 5.93	+ 6 11 17.97
Glasgow (*Scotland*)	+55 52 42.6	− 10 51.5	9.998993	− 4 51 1.4	+ 0 17 10.6
Gotha	+50 56 37.5	− 11 25.9	9.999114	− 5 51 2.57	− 0 42 50.53
Göttingen	+51 31 47.9	− 11 22.8	9.999100	− 5 47 58.4	− 0 39 46.4
Graz	+47 4 37.2	− 11 38.8	9.999213	− 6 10 0	− 1 1 48
Greenwich	+51 28 38.1	− 11 23.1	9.999101	− 5 8 12.04	0 0 0
Hamburg	+53 33 7.0	− 11 10.1	9.999049	− 5 48 5.7	− 0 39 53.7
Hanover	+43 42 15	− 11 39.6	9.999300	− 0 19 4.13	+ 4 49 7.91
Harrow	+51 34 47.4	− 11 22.6	9.999098	− 5 6 52.1	+ 0 1 19.9
Hastings-on-Hudson	+40 59 25	− 11 33.2	9.999369	− 0 12 42.4	+ 4 55 29.6
Haverford	+40 0 40.1	− 11 29.4	9.999394	− 0 6 59.34	+ 5 1 12.70
Heidelberg	+49 24 35	− 11 32.5	9.999153	− 5 43 0.5	− 0 34 48.5
Helsingfors	+60 9 42.6	− 10 5.6	9.998893	− 6 48 1.18	− 1 39 49.14
Hereny	+47 15 47.4	− 11 38.4	9.999208	− 6 14 36.75	− 1 6 24.71
Hong Kong	+22 18 12.2	− 8 10.7	9.999789	−12 44 53.9	− 7 36 41.9
Hudson	+41 14 42.6	− 11 34.1	9.999363	+ 0 17 32.12	+ 5 25 44.16
Ipswich	+52 0 33.0	− 11 20.1	9.999088	− 5 13 7.84	− 0 4 55.80

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude.	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Jamaica	+18 24 51	− 6 58.7	9.999854	+ 0 3 17.5	+ 5 11 29.5
Jena	+50 55 35.6	− 11 26.0	9.999115	− 5 54 32.85	− 0 46 20.81
Kalocsa	+46 31 42	− 11 39.6	9.999227	− 6 24 6.3	− 1 15 54.3
Karlsruhe	+49 0 29.6	− 11 33.9	9.999163	− 5 41 48.55	− 0 33 36.51
Kasan	+55 47 24.2	− 10 52.2	9.998995	− 8 24 40.9	− 3 16 28.9
Kew	+51 28 6	− 11 23.2	9.999101	− 5 6 56.9	+ 0 1 15.1
Kiel	+54 20 28.6	− 11 4.2	9.999030	− 5 48 47.7	− 0 40 35.7
Kiew	+50 27 12.5	− 11 28.2	9.999127	− 7 10 12.75	− 2 2 0.71
Königsberg	+54 42 50.6	− 11 1.3	9.999021	− 6 30 10.95	− 1 21 58.91
Kremsmünster	+48 3 23.7	− 11 36.7	9.999188	− 6 4 43.6	− 0 56 31.6
La Plata	−34 54 30	+ 10 56.7	9.999520	− 1 16 35.0	+ 3 51 37.0
Leiden	+52 9 20.0	− 11 19.3	9.999084	− 5 26 8.39	− 0 17 56.35
Leipzig	+51 20 6.3	− 11 23.9	9.999104	− 5 57 46.06	− 0 49 34.02
Leyton	+51 34 34	− 11 22.6	9.999098	− 5 8 11.17	+ 0 0 0.87
Lisbon (*Marine Obs.*)	+38 42 17.6	− 11 23.3	9.999427	− 4 31 38.5	+ 0 36 33.5
Lisbon (*Royal Obs.*)	+38 42 31.3	− 11 23.1	9.999427	− 4 31 27.36	+ 0 36 44.68
Liverpool	+53 24 3.8	− 11 11.2	9.999053	− 4 55 54.8	+ 0 12 17.2
Lübec	+53 51 31.2	− 11 7.9	9.999042	− 5 50 57.59	− 0 42 45.55
Lund	+55 41 52.1	− 10 53.0	9.998997	− 6 0 57.07	− 0 52 45.03
Lyons	+45 41 40.8	− 11 40.3	9.999248	− 5 27 20.1	− 0 19 8.1
Madison	+43 4 37.0	− 11 38.7	9.999316	+ 0 49 25.78	+ 5 57 37.82
Madras	+13 4 8.1	− 5 7.6	9.999925	−10 29 11.4	− 5 20 59.4
Madrid	+40 24 30.0	− 11 31.1	9.999384	− 4 53 26.6	+ 0 14 45.4
Manheim	+49 29 11.0	− 11 32.2	9.999151	− 5 42 2.56	− 0 33 50.52
Marburg	+50 48 46.9	− 11 26.5	9.999118	− 5 43 17.0	− 0 35 5.0
Markree	+54 10 31.8	− 11 5.5	9.999034	− 4 34 23.6	+ 0 33 48.4
Marseilles	+43 18 19.1	− 11 39.1	9.999310	− 5 29 46.68	− 0 21 34.64
Mauritius	−20 5 39	+ 7 30.8	9.999828	− 8 58 24.5	− 3 50 12.5
Melbourne	−37 49 53.3	+ 11 18.1	9.999449	−14 48 6.18	− 9 39 54.14
Mexico	+19 26 1.3	− 7 18.4	9.999838	+ 1 28 14.63	+ 6 36 26.67
Milan	+45 27 59.4	− 11 40.4	9.999254	− 5 44 58.01	− 0 36 45.97
Modena	+44 38 52.8	− 11 40.4	9.999275	− 5 51 54.8	− 0 43 42.8
Montreal	+45 30 17.0	− 11 40.4	9.999253	− 0 13 53.50	+ 4 54 18.54
Montsouris	+48 49 18.0	− 11 34.5	9.999168	− 5 17 32.72	− 0 9 20.68
Moscow	+55 45 19.8	− 10 52.5	9.998995	− 7 38 29.2	− 2 30 17.2
Mount Hamilton	+37 20 24.6	− 11 14.9	9.999461	+ 2 58 22.77	+ 8 6 34.81
Munich	+48 8 45.5	− 11 36.5	9.999186	− 5 54 38.17	− 0 46 26.13
Naples	+40 51 45.4	− 11 32.8	9.999372	− 6 5 12.9	− 0 57 0.9
Nashville	+36 8 54.4	− 11 6.6	9.999490	+ 0 39 0.2	+ 5 47 12.2
Natal	−29 50 47.4	+ 10 3.7	9.999637	− 7 12 13.22	− 2 4 1.18
Neuchatel	+47 0 1.2	− 11 38.9	9.999215	− 5 36 1.90	− 0 27 49.86
New Haven (*Old Obs'y*)	+41 18 36.5	− 11 34.3	9.999361	− 0 16 29.90	+ 4 51 42.14

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude.	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
New Haven (*Yale Univ.*)	+41 19 22.3	− 11 34.4	9.999361	− 0 16 31.48	+ 4 51 40.56
New York (*Columb. Coll.*)	+40 45 23.1	− 11 32.4	9.999375	− 0 12 18.40	+ 4 55 53.64
New York (RUTHERFURD)	+40 43 48.5	− 11 32.3	9.999376	− 0 12 15	+ 4 55 57
Nice	+43 43 16.7	− 11 39.6	9.999299	− 5 37 24.24	− 0 29 12.20
Nicolaeff . . .	+46 58 20.6	− 11 38.9	9.999216	− 7 16 5.9	− 2 7 53.9
Northfield . . .	+44 27 41.6	− 11 40.3	9.999280	+ 1 4 23.77	+ 6 12 35.81
Oakland (*Cal.*) . .	+37 48 5	− 11 17.9	9.999449	+ 3 0 54.58	+ 8 9 6.62
Odessa . . .	+46 28 36.2	− 11 39.6	9.999228	− 7 11 14.3	− 2 3 2.3
Ogden . . .	+41 13 8.6	− 11 34.0	9.999363	+ 2 19 47.52	+ 7 27 59.56
O-Gyalla . . .	+47 52 27.3	− 11 37.1	9.999192	− 6 20 57.63	− 1 12 45.59
Olmütz . . .	+49 35 43	− 11 31.8	9.999149	− 6 17 19.9	− 1 9 7.9
Oxford (*Mississippi*) .	+34 22 12.6	− 10 52.0	9.999533	+ 0 49 55.05	+ 5 58 7.09
Oxford (*Radcliffe*) .	+51 45 36.0	− 11 21.6	9.999094	− 5 3 9.4	+ 0 5 2.6
Oxford (*University*) .	+51 45 34.2	− 11 21.6	9.999094	− 5 3 11.64	+ 0 5 0.40
Padua . . .	+45 24 2.5	− 11 40.4	9.999256	− 5 55 41.24	− 0 47 29.20
Palermo . . .	+38 6 44	− 11 19.7	9.999442	− 6 1 36.7	− 0 53 24.7
Paramatta . . .	−33 48 49.8	+ 10 46.9	9.999546	−15 12 12.2	−10 4 0.2
Paris	+48 50 11.2	− 11 34.5	9.999168	− 5 17 32.99	− 0 9 20.95
Philadelphia . .	+39 57 7.5	− 11 29.2	9.999396	− 0 7 33.58	+ 5 0 38.46
Plonsk . . .	+52 37 40.0	− 11 16.4	9.999072	− 6 29 44.05	− 1 21 32.01
Pola	+44 51 49.0	− 11 40.4	9.999270	− 6 3 35.22	− 0 55 23.18
Portsmouth . .	+50 48 3.0	− 11 26.6	9.999118	− 5 3 47.2	+ 0 4 24.8
Potsdam . . .	+52 22 56	− 11 17.9	9.999078	− 6 0 27.9	− 0 52 15.9
Poughkeepsie . .	+41 41 18	− 11 35.5	9.999351	− 0 12 38.4	+ 4 55 33.6
Prague . . .	+50 5 18.5	− 11 29.8	9.999136	− 6 5 53.5	− 0 57 41.5
Princeton . . .	+40 20 57.8	− 11 30.8	9.999385	− 0 9 34.54	+ 4 58 37.50
Princeton (*Halsted*) .	+40 20 55.8	− 11 30.9	9.999386	− 0 9 32.60	+ 4 58 39.44
Providence (SEAGRAVE)	+41 49 46	− 11 35.9	9.999348	− 0 22 34.52	+ 4 45 37.52
Providence (*Ladd*) .	+41 50 21	− 11 35.9	9.999348	− 0 22 36.09	+ 4 45 35.95
Pulkowa . . .	+59 46 18.7	− 10 10.4	9.998902	− 7 9 30.71	− 2 1 18.67
Quebec . . .	+46 47 59.2	− 11 39.2	9.999220	− 0 23 19.40	+ 4 44 52.64
Quito	− 0 14 0	+ 0 5.7	0.000000	+ 0 7 8	+ 5 15 20
Riga	+56 57 7	− 10 41.3	9.998967	− 6 44 40	− 1 36 28
Rio de Janeiro . .	−22 54 23.8	+ 8 21.1	9.999779	− 2 15 30.63	+ 2 52 41.41
Rochester . . .	+43 9 16.8	− 11 38.8	9.999314	+ 0 2 9.74	+ 5 10 21.78
Rome (*Coll. Rom.*) .	+41 53 53.6	− 11 36.1	9.999346	− 5 58 7.5	− 0 49 55.5
Rome (*Capitol*) . .	+41 53 33.5	− 11 36.0	9.999346	− 5 58 8.56	− 0 49 56.52
San Fernando . .	+36 27 41.5	− 11 8.9	9.999483	− 4 43 22.4	+ 0 24 49.6
San Francisco . .	+37 47 24.1	− 11 17.8	9.999450	+ 3 1 30.47	+ 8 9 42.51
Santiago de Chile .	−33 26 42.0	+ 10 43.4	9.999555	− 0 25 25.74	+ 4 42 46.30
Schwerin . . .	+53 37 37.9	− 11 9.6	9.999047	− 5 53 52.9	− 0 45 40.9
South Hadley . .	+42 15 18.2	− 11 37.0	9.999337	− 0 17 51.75	+ 4 50 20.29

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude.	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Speier	+49 18 55.4	− 11 32.9	9.999156	− 5 41 57.6	− 0 33 45.6
St. Louis . . .	+38 38 3.6	− 11 22.7	9.999429	+ 0 52 37.07	+ 6 0 49.11
St. Petersburg . .	+59 56 29.7	− 10 8.4	9.998898	− 7 9 25.5	− 2 1 13.5
St. Petersburg (*Univ.*)	+59 56 32.0	− 10 8.4	9.998898	− 7 9 23.45	− 2 1 11.41
Stockholm . . .	+59 20 34.0	− 10 15.5	9.998912	− 6 20 26.04	− 1 12 14.00
Stonyhurst . . .	+53 50 40	− 11 8.0	9.999042	− 4 58 19.36	+ 0 9 52.68
Strassburg (*New Obs.*)	+48 35 0.8	− 11 35.3	9.999174	− 5 39 16.69	− 0 31 4.65
Strassburg (*Old Obs.*) .	+48 34 53.8	− 11 35.3	9.999174	− 5 39 14.53	− 0 31 2.49
Sydney . . .	−33 51 41.1	+ 10 47.3	9.999545	−15 13 0.9	−10 4 48.9
Syracuse . . .	+43 2 13.1	− 11 38.6	9.999317	− 0 3 38.68	+ 5 4 33.36
Tacubaya . . .	+19 24 17.5	− 7 17.8	9.999839	+ 1 28 34.45	+ 6 36 46.49
Taschkent . . .	+41 19 32.2	− 11 34.4	9.999361	− 9 45 22.84	− 4 37 10.80
Tokio	+35 39 17.5	− 11 2.8	9.999502	−14 27 10.0	− 9 18 58.0
Toronto . . .	+43 39 35.9	− 11 39.6	9.999301	+ 0 9 22.61	+ 5 17 34.65
Toulouse . . .	+43 36 45.3	− 11 39.5	9.999302	− 5 14 3.1	− 0 5 51.1
Trieste . . .	+45 38 45.4	− 11 40.3	9.999250	− 6 3 15.05	− 0 55 3.01
Troy (*N. Y.*) . .	+42 43 52.9	− 11 38.1	9.999325	− 0 13 29.75	+ 4 54 42.29
Tulse Hill . . .	+51 26 47.0	− 11 23.3	9.999102	− 5 7 44.35	+ 0 0 27.69
Turin	+45 4 8.4	− 11 40.4	9.999265	− 5 38 59.2	− 0 30 47.2
Twickenham . .	+51 27 4.2	− 11 23.3	9.999102	− 5 6 58.9	+ 0 1 13.1
Upsala (*New Obs.*) .	+59 51 29.4	− 10 9.3	9.998900	− 6 18 42.27	− 1 10 30.23
Utrecht . . .	+52 5 9.5	− 11 19.7	9.999086	− 5 28 43.7	− 0 20 31.7
Venice . . .	+45 25 49.5	− 11 40.4	9.999255	− 5 57 37.8	− 0 49 25.8
Vienna (*Josephstadt*) .	+48 12 53.8	− 11 36.2	9.999183	− 6 13 37.3	− 1 5 25.3
Vienna (*New Obs.*) .	+48 13 55.4	− 11 36.2	9.999183	− 6 13 33.5	− 1 5 21.5
Vienna (*Old Obs.*) .	+48 12 35.5	− 11 36.3	9.999184	− 6 13 43.78	− 1 5 31.74
Vienna (*Ottakring*) .	+48 12 47.2	− 11 36.2	9.999183	− 6 13 23.15	− 1 5 11.11
Warsaw . . .	+52 13 5.7	− 11 18.9	9.999082	− 6 32 19.4	− 1 24 7.4
Washington . .	+38 53 38.8	− 11 24.1	9.999422	0 0 0	+ 5 8 12.04
Washington (*New Obs.*)	+38 55 17.6	− 11 24.2	9.999422	+ 0 0 4.11	+ 5 8 16.15
Washington (*Smithsonian*)	+38 53 17.3	− 11 24.1	9.999422	− 0 0 5.8	+ 5 8 6.2
West Point (*Old Obs.*)	+41 23 31	− 11 34.6	9.999359	− 0 12 22.71	+ 4 55 49.33
West Point (*New Obs.*)	+41 23 22.1	− 11 34.6	9.999359	− 0 12 21.49	+ 4 55 50.55
Wilhelmshaven . .	+53 31 52.0	− 11 10.3	9.999050	− 5 40 47.25	− 0 32 35.21
Williamstown (*Mass.*).	+42 42 30	− 11 38.0	9.999325	− 0 15 22	+ 4 52 50
Williamstown (*Victoria*)	−37 52 7.2	+ 11 18.3	9.999448	−14 47 50.8	− 9 39 38.8
Wilna	+54 40 59.1	− 11 1.6	9.999021	− 6 49 21.0	− 1 41 9.0
Windsor . . .	−33 36 28.9	+ 10 44.9	9.999551	−15 11 32.81	−10 3 20.77
Zürich . . .	+47 22 40.0	− 11 38.2	9.999205	− 5 42 24.4	− 0 34 12.4

ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

PART I—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

The greater portion of this Ephemeris, embracing the positions of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain fixed stars; the ephemerides of the planets Mercury, Venus, Mars, Jupiter, and Saturn, is designed for the special use of navigators. The remainder contains the ephemerides of Uranus and Neptune, the heliocentric co-ordinates of the seven major planets, the rectangular equatorial co-ordinates of the sun, the moon's longitude and latitude, data for the libration of the moon, the obliquity of the ecliptic, the equation of the equinoxes, etc.

TIME.

Astronomers make use of several different kinds of time; mean solar time; true, or apparent solar time; and sidereal time.

Solar Time.—Solar time is that used for all the purposes of ordinary life, and is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour-angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the same meridian are not exactly equal, owing to the varying motion of the earth around the sun, and to the obliquity of the ecliptic. The intervals between the sun's transits over the meridian being unequal it is impossible to regulate a clock or chronometer so that it shall accurately follow the sun.

To avoid the irregularity which would arise from using the true sun as the measure of time, a fictitious sun, called the *Mean Sun*, is supposed to move in the equator with a uniform velocity. This mean sun is supposed to keep, on the average, as near the real sun as is consistent with perfect uniformity of motion; it is sometimes in advance of it, and sometimes behind it, the greatest deviation being about 16 minutes of time.

Mean Solar Time, which is perfectly equable in its increase, is measured by the motion of this mean sun. The clocks in ordinary use and the chronometers used by navigators are regulated to mean solar time.

True, or *Apparent Solar Time* is measured by the motion of the real sun.

The difference between apparent and mean time is called the *Equation of Time.* By means of it, we change apparent to mean time, or the reverse. Thus, if the apparent time be given, the mean time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I of the Calendar for each month. If the mean time be given, the apparent time is obtained by applying the equation of time as directed by the precept on page II of the Calendar.

Sidereal Time.—Sidereal time is measured by the daily motion of the stars; or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascension of the stars is counted. This point is the vernal equinox, and its hour-angle is called *Sidereal Time.* Astronomical clocks, regulated to sidereal time, are called sidereal clocks.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over the meridian, and its next succeeding return to the same meridian. It is about $3^m\ 56^s$ shorter than the mean solar day; 365¼ solar days, or a year, being divided into 366¼ sidereal days.

It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 21st of each year the sidereal clock agrees with the mean time, or ordinary clock, and the former gains on the latter about $3^m 56^s$ per day, so that at the end of a year it will have gained an entire day, and will again agree with the mean time clock.

Day.—The *Civil Day*, according to the customs of society, commences at midnight, and comprises twenty-four hours, from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each, of which the first is marked A. M., and the last is marked P. M.

The *Astronomical Day* begins at noon on the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical as well as the civil time may be either apparent or mean, according as it is reckoned from apparent noon or from mean noon.

The civil day begins twelve hours before the astronomical day; therefore the first period of the civil day answers to the last part of the preceding astronomical day, and the last period of the civil day corresponds to the first part of the same astronomical day. Thus, January 9th, 2 o'clock, A. M., civil time, is January 8th, 14^h, astronomical time; and January 9th, 2 o'clock, P., M., civil time, is also January 9th, 2^h, astronomical time. The rule, then, for the transformation of civil time into astronomical time is this: *If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.*

To change astronomical to civil time, we simply write P. M. after it, if it is less than 12 hours. If greater than 12 hours, we subtract 12 hours from it, add 1 to the days, and write A. M. For example, January 3d, 23 hours, astronomical time, is January 4th, 11 o'clock, A. M., civil time.

If the longitude from Greenwich be expressed in time, and, when *west, added* to the local time, or, when *east, subtracted* from the local time, the result is the corresponding Greenwich time. If the local mean time is used, the result is the Greenwich mean time, which ordinarily is that required for the use of this Ephemeris. The rule is the same, whether we use mean or sidereal time.

THE CALENDAR.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, the contents of which are as follow:—

Page I contains, for Greenwich apparent noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, and the *Equation of Time.* Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of any quantity for any given Greenwich apparent time. The hourly differences are given for the instant of apparent noon at Greenwich, and, when greater accuracy, is required, should be first interpolated for half the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is $0^h 0^m 0^s$. The longitude from Greenwich expressed in time, if west, is at that instant the Greenwich apparent time, or time after Greenwich apparent noon; if east, it is time before Greenwich apparent noon. The longitude of any place is therefore employed in reducing the quantities on this page to apparent noon at the place.

The right ascension of the sun thus reduced is the sidereal time of local apparent noon. The difference between it and the clock time of the meridian passage of the sun is the error of the clock on sidereal time.

The declination of the sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the sun.

As an example of the use of page I:—

Let the sun's declination be required at apparent noon, 1896, May 31, at a place whose longitude is 179° 40′, or $11^h 58^m 40^s$ east from Greenwich:

		h	m	s
Local apparent time	May 31,	0	0	0
Longitude from Greenwich (subtractive)		11	58	40
Greenwich apparent time	May 30,	12	1	20

Reducing the minutes and seconds to decimals of an hour, we find that this moment is $12^h.022$ after Greenwich apparent noon on May 30, or $11^h.978$ before Greenwich apparent noon on May 31.

On page 74 of the Ephemeris we find that the change of declination in one hour is

	″
May 30, at Greenwich apparent noon	+ 21.58
May 31, at Greenwich apparent noon	+ 20.63
Difference for one day	0.95

If we want to be very exact, we find the amount of this hourly difference for the time which is half way between Greenwich noon and the time of observation; that is, for 6 hours after Greenwich noon of the 30th, this being half of 12 hours. Six hours is 0.25 of a day; so the calculation is as follows:—

	″
Difference for one hour, May 30	21.58
Change for 0.25 of a day or 0″.95×0.25	— 0.24
Difference at 6 hours after noon	21.34

$21''.34 \times 12.022 = 256''.5 = 4'\ 16''.5$

		°	′	″
Declination at Greenwich noon, May 30	N.	21	53	26.8
Change in 12.022 hours (additive)			4	16.5
Sun's declination at time of observation	N.	21	57	43.3

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is $11^h.978$ before Greenwich noon of May 31; half this interval is about 0.25 of a day, and the hourly motion for the middle of the interval is 20″.87. Then, we find:—

		°	′	″
Declination at Greenwich noon, May 31	N.	22	1	53.3
Product of $20''.87 \times 11.978 = 250''$ (subtractive)			4	10.0
Sun's declination at time of observation	N.	21	57	43.3

It will always be well to make the calculation by both methods, as their agreement will show both to be right.

At sea it is ordinarily sufficient to have the declination to the nearest half minute, and the reduction may be found by Table 12 of BOWDITCH'S *American Practical Navigator.*

The equation of time, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the apparent time, or the time given by an observation of the sun, to obtain the mean time. The heading of the column directs the manner in which the equation is to be applied. When there is a change in the course of the month from addition to subtraction or the reverse (as in the months of April and June), the two different directions are separated by a line, while a corresponding line below points out the dates between which the change takes place. The equation of time, as given on page I, is the mean time of apparent noon, or the hour-angle of the mean sun at that instant.

The Sun's Semidiameter and the *Sidereal Time of Semidiameter Passing Meridian* are also given on page I. The sun's semidiameter is used in reducing the altitude of the upper or lower limb of the sun to the altitude of the center; and in reducing the angular distance of the limb from the moon or some other object, to the distance from the center of the sun. The sidereal time of semidiameter passing the meridian is employed in obtaining the passage of the sun's center over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the first, or western, limb; and to be subtracted from the time of transit of the second, or eastern, limb.

Page II contains, for Greenwich mean noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, the *Equation of Time*, and the *Sidereal Time of Mean Noon.* The hourly changes of these quantities are also given, and may be used in reducing them to any Greenwich mean time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required, in the way described in explaining the calculation of the declination.

The right ascension and declination on pages I and II are affected by aberration, and therefore denote the *apparent* position of the *true* sun. Page II is more conveniently used when the mean time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to mean time. The quantities on this page can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the mean time from observations of the sun, and the latitude from observations out of the meridian. The heading of the column directs the manner in which it is to be applied to mean time to obtain the apparent time.

The equation of time, as given on page II, is the apparent time of mean noon; and is equivalent to the hour-angle of the true sun at the instant of mean noon.

The sidereal time of mean noon is also the right ascension of the mean sun at Greenwich mean noon. It may be reduced for the longitude, or to any Greenwich mean time, by using the hourly difference, $9^s.8565$; or by Table III, appended to this volume, for reducing intervals of mean solar to sidereal time. Table 9 of BOWDITCH's *Navigator* may be used for the same purpose.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the R. A. of the mean sun for this time, as last explained: this being added to the local mean time will give the sidereal time.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a sidereal interval to a mean time interval, in Table II, appended to this volume, or Table 8 of BOWDITCH's *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^s.8296$ by the hours and parts of an hour of the given sidereal time.

As examples of the use of page II:—

1.—Let the sun's right ascension and the equation of time be required for 1896, May 15, $9^h\ 2^m\ 30^s$, A. M., mean time, at a place whose longitude is 100° 10′, or $6^h\ 40^m\ 40^s$, west of Greenwich.

		h	m	s	
Local astronomical mean time . . .	May 14,	21	2	30	
Longitude from Greenwich (additive)		6	40	40	
Greenwich mean time	May 15,	3	43	10	$=3^h.7194$

Sun's Right Ascension.	h m s
May 15, Greenwich noon	3 31 0.87
H. D. $9^s.896 \times 3.7194$	+ 0 36.81
	3 31 37.68

Equation of Time.	m s	
May 15, noon	3 49.55	(additive)
H. D. $-0^s.039 \times 3.72$	− 0.14	
	3 49.41	

In this case, the hourly differences interpolated to half the interval, or $1^h.9$ after noon, have been used.

The equation of time in this example is additive to mean time. Its reduction could also have been found by Table 12 of BOWDITCH'S *Navigator.*

2.—If the sidereal time is required for the same date and time, we have:—

	h m s
May 15, Sidereal Time (at Greenwich mean noon)	3 34 50.42
Hourly difference $9^s.8565 \times 3.7194$	+ 0 36.66
Add the local astronomical mean time	21 2 30.00
The required sidereal time is (rejecting 24^h)	0 37 57.08

The reduction $0^m\ 36^s.66$ could have been found in Table III corresponding to the Greenwich mean time $3^h\ 43^m\ 10^s$ or by Table 9 of BOWDITCH'S *Navigator.*

3.—On 1896, May 15, A. M., at a place whose longitude is 100° 10′ W., suppose the sidereal time to be $0^h\ 36^m\ 37^s.16$, and that the corresponding mean time is required.

The astronomical day is May 14; the longitude in time, $+\ 6^h\ 40^m\ 40^s$, or $+\ 6^h.678$.

		h m s	
May 14, Sidereal Time (at Greenwich mean noon)		3 30 53.86	
The H. D. $9^s.8565 \times 6.678$, or the reduction for $6^h\ 40^m\ 40^s$ in Table III		+ 1 5.82	
The sidereal time of local mean noon		3 31 59.68	
The given sidereal time ($+\ 24^h$, if necessary for the following subtraction)		24 36 37.16	
Subtracting the first from the second gives the sidereal interval from noon		21 4 37.48	$= 21^h.07708$
$-\ 9^s.8296 \times 21.07708$ or the reduction for $21^h\ 4^m\ 37^s.48$ in Table II		− 3 27.18	
The required astronomical mean time is	May 14,	21 1 10.30	

Page III contains, for Greenwich mean noon of each day, *The Sun's True Longitude* and *Latitude*, and the *Logarithm of the Radius Vector of the Earth.* The longitudes of the sun are the true longitudes, not corrected for aberration. The longitude is given in two columns, headed λ and λ'; λ representing the sun's longitude counted from the true equinox of the date; and λ', the same co-ordinate counted from the mean equinox of the beginning of the year, (January $1^d.0$). A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The latitude is referred to the ecliptic of the date.

The last column on page III contains the *Mean Time of Sidereal Noon;* that is, the number of hours, minutes and seconds after Greenwich mean noon when the first point of Aries passes the meridian of Greenwich. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich sidereal time by means of the hourly difference, $-9^s.8296$. The reduction, however, can be taken directly from Table II for reducing intervals of sidereal time to mean solar time; or from Table 8 of BOWDITCH'S *Navigator.*

This column may be used in converting sidereal time to mean time instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal noon and the given sidereal time is less than 24 hours Were it more than 24 hours, the mean time of sidereal noon should be taken out for May 13, that is the preceding astronomical day.

		h m s	
May 14, the mean time of Greenwich sidereal noon is		20 25 44.78	
The H. D. $-\ 9^s.8296 \times 6.678$, or the reduction for longitude, Table II		− 1 5.64	
The mean time of local sidereal noon		20 24 39.14	
Add the given sidereal time		0 36 37.16	$= 0^h.6103$
The sum is		21 1 16.30	
$-\ 9^s.8296 \times 0.6103$, or the reduction for $0^h\ 36^m\ 37^s.2$ in Table II		− 0 6.00	
The required astronomical mean time	May 14,	21 1 10.30	

Page IV contains *The Moon's Semidiameter* and Equatorial *Horizontal Parallax*, for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time, in the same way as the sun's declination and the equation of time in the preceding examples. The sign plus or minus prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.272, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1896, January 11, 10^h, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of January 11 is $3''.8$; then,

$$12^h : 10^h = 3''.8 : 3''.2,$$

which is the correction to be subtracted from the semidiameter at noon, because the semidiameter is decreasing. The moon's semidiameter then, for January 11, 10^h, is $15' \, 35''.6$.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for half the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Upper Transit at Greenwich*, which is given on page IV to tenths of a minute, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude converted into time, the local time of the moon's meridian passage at any other place, may be computed. The reduction may be taken by simple inspection from BOWDITCH's Table 11. The last column of this page contains the *Age* of the moon, or the time elapsed since the preceding new moon, to tenths of a day.

Pages V—XII contain *The Moon's Right Ascension* and *Declination*, for each day and hour of Greenwich mean time. They are accompanied with columns of differences for one minute, which are also given at each hour. The Greenwich mean time, which is required for taking out these quantities, may be taken from a well-regulated chronometer, or obtained by applying the longitude converted into time, to the local mean time of the observer. The right ascension or declination is taken out for the day and hour of the Greenwich mean time; the *Diff. for 1 Minute* multiplied by the minutes and parts of a minute of the Greenwich time, and the product added to, or subtracted from the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1896, August 1, $10^h \, 10^m \, 30^s$, astronomical mean time at Greenwich:—

Right Ascension.	h m s	*Declination.*	° ′ ″
August 1, 10^h . . .	2 30 3.54	. . . . . .	N. 20 12 45.4
Diff. $2^s.0022 \times 10.5$ . . =	+ 21.02	$10''.063 \times 10.5$ =	+ 1 45.7
August 1, $10^h \, 10^m \, 30^s$ . .	2 30 24.56	. . . . . .	N. 20 14 31.1

The differences interpolated for $5^m.2 = 0^h.09$ are, for the right ascension $2^s.0022$, and for the declination $10''.063$, which have been used for greater precision.

Page XII contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII—XVIII contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, and from the four larger planets and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore astronomical. All the distances that can be observed on the same day, are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W. or E. is affixed to the name of the sun, planet or star, to indicate that it is on the west, or east side of the moon.

An observer on the earth's surface having measured a lunar distance, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the true or geocentric distance, that is, the distance as it would have appeared from the centre of the earth at the moment of observation. With this distance and the distances in the Ephemeris of the same bodies on the same day, the Greenwich mean time of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris, between every two successive distances, the logarithm of the seconds of time in which the distance changes 1″; or, as it is usually called, the *Proportional Logarithm of the Difference*. It is given for the middle instant of the two hours between which it is placed.

For computing the Greenwich time we have the following rule:—

Find in the Almanac the two distances between which the true distance falls; take out the nearer of these, the hours of Greenwich time over it, and the P. L. of Diff. between them.

Find the difference between the true distance and the distance taken from the Almanac; and from the proportional logarithm of this difference, as found in the Navigator (*Table 45*), *subtract the P. L. of Diff. taken from the Almanac.*

The result is the proportional logarithm of an interval of time to be added to the hours of Greenwich time, taken from the Almanac, when the earlier Almanac-distance is used; to be subtracted from the hours of Greenwich time, when the later Almanac-distance is used.

Another method is, to add the common logarithm of the difference of the true and the Almanac-distances to the P. L. of Diff. of the Almanac; the sum will be the common logarithm of the correction to be applied to the hours of Greenwich time. Table 34 of BOWDITCH'S *Navigator* saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the P. L. of Diff. in the Ephemeris varies, the Greenwich time found by the methods just described may not be sufficiently exact. To correct it for such variation, or second difference, take the difference between the P. L. of Diff. used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones). With this difference, and the first correction of the Greenwich time already found, enter Table I, appended to this volume, and take out the corresponding seconds, which are to be added to the approximate Greenwich time when the Prop. Logs. in the Ephemeris are decreasing; and subtracted when they are increasing.

Thus the Greenwich mean time of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer-time and the Greenwich mean time will be the error of the chronometer on Greenwich time as found from the lunar distance. In this way lunar distances can be used as a check upon the chronometer. By a series of carefully observed lunar distances on both sides of the moon, the chronometer-error may generally be ascertained within 20 or 30 seconds.

If the observer has found the local mean time of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the lunar distance will be his longitude. A longitude derived by this method should always be considered as uncertain by 5′ or more.

As an example of finding the Greenwich mean time from a lunar distance, suppose that in 1896, March 24, the corrected distance of the moon's centre from that of Aldebaran is 59° 1′:—

		°	′	″		
Corrected distance		59	1	0		
Distance in Ephemeris March 24, XII^{h}		53	26	41	P. L.	0.2394
Difference		0	34	19	P. L.	0.7198
		h	m	s	P. L.	0.4804
Time from XII^{h} (*after*)	+	0	59	33		
Corr. for 2d Diff., Table I	+			6		
Greenwich mean time March 24		12	59	39		

By a table of common logarithms, or a table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:—

From Ephemeris	P. L.	0.2394
Diff. of distances, 34′ 19″ = 2059″	log	3.3137
Red. of Greenwich time, $3573^s = 0^h\ 59^m\ 33^s$	log	3.5531

The result is the same as by the previous method.

Pages 218—249 contain the geocentric ephemerides of the seven major planets. The positions are referred to the equator and true equinox of the date, and corrected for aberration; they are, therefore, apparent positions. All the data except meridian passage are given for the moment of Greenwich mean noon. The column *Meridian Passage* gives the hour, minute and tenth of that passage of the planet over the meridian of Greenwich which occurs next after the noon of the date.

The right ascension and declination of a planet are required whenever it has been observed for time, latitude or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples for the sun, previously given. The local mean time of passage across any other meridian can be found by dividing the daily differences by 24, and multiplying the quotient by the hours and fractions of the longitude of the place. The product is subtractive from the time of Greenwich passage when the place is east of Greenwich, and additive when west. The corrections can never exceed one-half the change for one day.

Pages 250—263 contain the heliocentric positions of the seven major planets, and the logarithms of their distances from the earth. The heliocentric longitude is reckoned, not from the true equinox, as in the preceding ephemerides, but from the mean equinox of the date. It is, therefore, necessary to apply nutation, if the longitude from the true equinox is required. The daily motion is given for the moment of Greenwich mean noon. The column *Reduction to Orbit* gives the correction to be applied to the heliocentric longitudes in order to obtain the longitude counted along the orbit of the planet. This longitude is equal to the distance of the node from the mean equinox, plus the distance of the planet from the node. The heliocentric latitude is counted from the moving plane of the ecliptic. The *Logarithm of Radius Vector* is the logarithm of the distance of the centre of the planet from that of the sun, at each Greenwich mean noon given in the first column. The two last columns give, in the same way, the logarithm of the true distance of the centre of the planet from that of the earth. The one column gives the quantity for the Greenwich noon indicated on the left hand side of the page, and the other for the noon which is midway between that date and the date next below it. In the case of Mercury, this intermediate date is mean noon of the day immediately following; in the case of Venus, Mars, Jupiter, and Saturn, it is mean noon of the second day following; and in the case of Uranus and Neptune, mean noon of the fourth day following.

Pages 264—271 contain the rectangular co-ordinates of the centre of the sun, referred to the centre of the earth as the origin, and to the true equator and equinox of each date as the circle and point of reference. Each co-ordinate is given first for Greenwich mean noon, and in the column following for mean midnight of the same day. The columns *Reduc. to Mean Eq'x of Jan.* 1.0 give the corrections to be applied to the co-ordinates for noon in order to obtain the corresponding co-ordinates referred to the mean equator and the mean equinox of January 1.0.

Pages 272—275 give the longitude and latitude of the moon for every Greenwich mean noon and midnight. Both quantities are referred to the true ecliptic and equinox of the date.

Pages 276 and 277 contain the position of the moon's equator and the mean longitude of the moon, and a table for computing the libration of the moon. The epochs of greatest libration of the moon, together with the formulæ for finding the libration in longitude and latitude are given on page 417.

Page 278 contains, for each tenth Greenwich mean noon, the values of the principal elements arising from the motion of the equinox, and also the aberration and parallax of the sun. The column *Apparent Obliquity of the Ecliptic* (HANSEN) gives the true inclination of the earth's equator to the ecliptic, without correction for the terms depending on the moon's longitude. The *Equation of Equinoxes* is really the astronomical nutation; that given *In Longitude* is the correction to be applied to the longitude of the body referred to the mean equinox; in order to obtain that longitude as referred to the true equinox. When the correction is positive, the true longitudes are greater than those referred to the mean equinox; while the contrary is true when the correction has the negative sign. The equation *In R. A.* is equal to that in longitude, multiplied by the cosine of the obliquity of the ecliptic.

The next column gives the *Precession of Equinoxes in Longitude*, from January 1.0 to each of the dates following. *The Sun's Aberration* is the quantity which is to be applied to the true longitude of the sun in order to obtain its apparent longitude. The correction being negative shows that the apparent longitude as affected by aberration is always less than the true longitude. The *Sun's Equatorial Horizontal Parallax*, given in the next column, is the angle subtended by the radius of the earth's equator, as seen from the centre of the sun.

PART II—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Page 280 contains the formulæ for reducing the positions of the fixed stars, using the notation of BESSEL, and the constants of PETERS and STRUVE. The formulæ by which the star-numbers are computed are also given.

Pages 281—284 contain the logarithms of the *Besselian Star Numbers, A, B, C, D,* for each Washington mean midnight. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent piace at the dates for which the numbers are given. If used in accordance with the English and French notation, the pair of quantities *A* and *B* must be interchanged with the pair *C* and *D;* that is, *A* must be interchanged with *C,* and *B* with *D.* In the first column along with the solar day is given, for certain dates, the sidereal hour of Washington mean midnight. The sidereal time for which any set of quantities is given can be found by interpolation from these numbers.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers:—

Computation of the apparent place of 41 Libræ for 1896, March 10, for the upper transit at Washington.

	$\log a$	0.5366	$\log b$	8.1370	$\log c$	8.6253 *n*	$\log d$	8.7518 *n*
(Page 281)	$\log A$	9.5583	$\log B$	0.9382 *n*	$\log C$	1.2681 *n*	$\log D$	0.4886
	$\log a'$	1.0793 *n*	$\log b'$	9.9037	$\log c'$	9.1764	$\log d'$	9.2889
	$\log A\,a$	0.0949	$\log B\,b$	9.0752 *n*	$\log C\,c$	9.8934	$\log D\,d$	9.2404 *n*
	$\log A\,a'$	0.6376 *n*	$\log B\,b'$	0.8419 *n*	$\log C\,c'$	0.4445 *n*	$\log D\,d'$	9.7775

		h m s		° ′ ″
Mean Place, 1896.0,	$\alpha_0 =$	15 32 55.278	$\delta_0 =$	− 18 57 32.84
	$A\,a =$	+ 1.244	$A\,a' =$	− 4.34
	$B\,b =$	− 0.119	$B\,b' =$	− 6.95
	$C\,c =$	+ 0.782	$C\,c' =$	− 2.78
	$D\,d =$	− 0.174	$D\,d' =$	+ 0.60
	$E =$	+ 0.001	$\tau\,\mu' =$	− 0.01
	$\tau\,\mu =$	+ 0.001		
Apparent Place, 1896, *Mar.* 10,	$a =$	15 32 57.013	$\delta =$	− 18 57 46.32

Pages 285—292 contain the *Independent Star-Numbers*, which can be used for the same purpose. The column τ gives the fraction of the year from the beginning of the fictitious year to each date. These quantities are connected with those of BESSEL by the relations given on page 280, where are also found the formulæ and precepts for the application of both systems of numbers. In order to use the Besselian numbers, it is necessary to have the values of the star-constants, *a, b, c, d, a′, b′, c′, d′*. The independent star-numbers are

given in order that the apparent place of the star may be determined when it is not convenient to compute these numbers.

The following is an example of the reduction of a star to apparent place by the independent star-numbers:—

Computation of the apparent place of 41 Libræ for 1896, March 10, for the upper transit at Washington.

	$\alpha^0 = 233^\circ\ 14'$		$\delta_0 = -\ 18^\circ\ 57'.5$		
	$G = 309\ 54$		$G + \alpha_0 = 183\ 8$		
	$H = 279\ 26$		$H + \alpha_0 = 152\ 40$		h m s
log $\frac{1}{15}$	8.8239	log $\frac{1}{15}$	8.8239	$\alpha_0 =$	15 32 55.278
log g	1.0533	log h	1.2741	$f =$	+ 1.112
log sin $(G + \alpha_0)$	8.7377 n	log sin $(H + \alpha_0)$	9.6620	$(g) =$	+ 0.014
log tan δ_0	9.5360 n	log sec δ_0	0.0242	$(h) =$	+ 0.608
log (g)	8.1509	log (h)	9.7842	$\tau\mu =$	+ 0.001
		Apparent R. A.,		$\alpha =$	15 32 57.013
log g	1.0533	log h	1.2741	$\delta_0 =$	$-\ 18^\circ\ 57'\ 32''.84$
log cos $(G + \alpha_0)$	9.9994 n	log cos $(H + \alpha_0)$	9.9486 n	$(g') =$	− 11.29
log (g')	1.0527 n	log sin δ_0	9.5117 n	$(h') =$	+ 5.43
		log (h')	0.7344	$(i) =$	− 7.61
				$\tau\mu' =$	− 0.01
		Apparent Dec.		$\delta =$	− 18 57 46.32
log i	0.9056 n				
log cos δ_0	9.9758				
log (i)	0.8814 n				

Pages 293—301 contain the mean places of three hundred and eighty-three stars, for the beginning of the fictitious year 1896, or the moment when the sun's mean longitude is 280°.

The annual variations are to be considered as the differential coefficients of each co-ordinate with respect to the time at the beginning of the year.

In order that the list of mean places of stars may serve the purpose of a working-catalogue for the convenient use of astronomers, the position of each of the northern circumpolar stars is given in duplicate, one position being for the upper and the other for the lower culmination. The positions for the lower culmination are marked S. P. In this case, the right ascensions are the sidereal times at which the star crosses the lower meridian; and, in order to have the expressions for the co-ordinates congruous in all cases, the declinations are counted from the equator through the north pole, and therefore exceed 90°. The time of observation and the setting of the circle, in order to find a star on the meridian, are then obtained uniformly for all the stars.

Beginning with the volume of 1882, the number of stars has been greatly increased, in order to make the list more useful to field-astronomers. To show at a glance these additional stars, they are indicated in the list by an asterisk.

Pages 302—313 contain the apparent positions of the four north polar stars, *α*, *δ* and *λ* Ursæ Minoris, and 51 Cephei, for every upper transit at Washington. They include the terms depending on the moon's longitude. The mean solar time of transit is given in the column *Mean Solar Date*, in order that each transit above and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26th is to be found, and we wish to know whether it precedes or follows the upper transit of the same date. On page 302, we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But, the lower transit following that of July 1st (page 308), does not take place until July 2.3. Hence, the lower transit of July 1st precedes the upper one of the same date. A transit occurring very nearly at noon may also be identified without a computation to ascertain the actual mean date, by simply noting the tenth of a day in the column of *Mean Solar Date.*

Pages 314—364 contain, for every tenth upper transit at Washington, the apparent places of those stars of the preceding list which are not marked with an asterisk. The mean solar date in each left hand column gives the day and tenth of the transit; so that each intermediate transit may be readily identified. Along with each co-ordinate is given, in small type, the change for ten days. This quantity is to be regarded as the differential coefficient corresponding to the dates for which the star-places are given.

Pages 365—376 contain the apparent right ascensions of all stars marked with an asterisk in the list of mean places. The apparent right ascension of each star is given only for that part of the year when it may readily be observed on the meridian. In the case of circumpolar stars, the right ascensions for lower, as well as upper, transit are given.

Pages 377—384 contain the apparent right ascension, declination, and semidiameter of the sun, and the sidereal time, all for Washington mean noon. Adjoining columns give the seconds of right ascension and of declination for apparent noon, that is, for the moment of transit of the sun's centre over the meridian of Washington. The hours and minutes of right ascension, and the degrees and minutes of declination are the same for both mean and apparent noon. In case they would have differed, the minute which would have been numerically larger is diminished by one, and the seconds increased by sixty, so that there is always a correspondence between the two numbers. The hourly motions in right ascension and declination are given for the moment of mean noon, but may be regarded as having the same values for apparent noon.

The *Equation of Time for Apparent Noon* is the correction to be applied to apparent time in order to obtain mean time. It is, therefore, mean time minus apparent time. Each number as given is the mean time of transit of the sun's centre over the meridian of Washington, counted from the nearest noon. The use of all the quantities is substantially the same as in the *Ephemeris for the Meridian of Greenwich.*

Pages 385—392 contain the right ascension, declination, semidiameter, and parallax of the moon, at the moment of transit over the meridian of Washington. The mean time given in the second column is that of transit of the moon's centre over this meridian. The differences for one hour of longitude are the amounts by which the local mean times of transit over a meridian one hour west of Washington exceed those given in the column *Mean Time of Transit*, supposing the rate of change to be uniform and equal to what it is at the moment of transit over the meridian of Washington. The next four columns need no especial explanation, except that the differences for one hour of longitude are computed as if the motion of the moon in right ascension were uniform. By means of them, the position of the moon can be computed with astronomical accuracy at the moment of transit over any meridian not exceeding one hour in longitude from that of Washington, by taking account of second differences. With greater longitudes of the place, the accuracy of the result obtained in this way will diminish. The columns of sidereal time of semidiameter passing meridian, etc., do not seem to need any explanation, except that they all refer to the moment of transit. The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When two opposite limbs are both so nearly full that they can be well observed, both are indicated; and the one which is deficient is printed in smaller type. When the illumination is so nearly equal that no choice can be made between them, both are printed in large type.

Pages 393—410 contain the geocentric apparent right ascensions and declinations of the seven major planets, and their semidiameters and horizontal parallaxes, for the moments of all those transits over the meridian of Washington which can be observed.

PART III—PHENOMENA.

This portion of *The American Ephemeris and Nautical Almanac* gives the principal astronomical phenomena of the year, reduced to Washington mean time, except in the case of the eclipses and the data for the rings of Saturn, which are given in Greenwich mean time.

Pages 412—416 inclusive contain the elements necessary for computing the eclipses of the sun which occur during the year.

The eclipse-elements are given for the moment of conjunction of the sun and moon in right ascension. The subsequent tables and results are not, however, computed from these elements unchanged; but from the accurate positions of the two bodies as interpolated for each hour of the eclipse. The principal circumstances of each eclipse are as follows:—

On the line "Eclipse begins" is given the Greenwich mean time at which the earth first touches the moon's penumbra, and the longitude and latitude of the point of touching.

The "Central eclipse begins" when the axis of the moon's shadow first touches the earth, and the longitude and latitude of the point of touching follow.

"Central eclipse at noon" indicates the moment when the axis of the shadow is coincident with the plane of the meridian at the point of its intersection with the earth's surface. To the observer at this point the eclipse will be central at the moment of apparent noon.

"Central eclipse ends" and "Eclipse ends" have the converse meaning of the beginning.

Maps of the Eclipses.—The regions in which each eclipse is visible, are shown upon the maps given in connection with them. From these maps may also be derived the approximate determination of the times of beginning and ending, and of the magnitude of the eclipses at any place. The dotted curves show the outlines of the shadow for each hour of Greenwich mean time and therefore pass through all the places where the eclipse begins or ends at that hour. To find at what hour the eclipse begins at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between these two hours of Greenwich mean time: the fraction of the hour may be determined by dividing the hour proportionally to the space which it represents on the map. This division may be a little more exact by allowing for the changes in this space as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the time at which the eclipse of 1896, August 8, begins and ends at Tokio.

For the beginning we compare the distance of the place from the curves of 16^h and 17^h and we find it to correspond to about 35 minutes from the former, therefore the time of beginning is approximately $16^h\ 35^m$; for the end we compare the distance of the place from the curves of 18^h and 19^h and find it to be about 5 minutes from the latter, therefore the approximate time of end is $18^h\ 55^m$, both of which are probably correct to within 2 or 3 minutes. Changing to local mean time the result will be:—

		Beginning.				*Ending.*	
		d	h	m		h	m
Greenwich mean time	Aug.	8	16	35		18	55
Longitude east			9	19		9	19
Local mean time	Aug.	9	1	54	Aug. 9	4	14

In the case of total and annular eclipses, a rough estimate of the magnitude of the eclipse may be obtained from the position of the place relatively to the central line and to the limit. On the central line, the eclipse is annular or total, while on the limit, the limb of the moon only grazes that of the sun.

More Accurate Computations.—A more accurate determination of the phases as visible at any point of the earth's surface may be obtained from the Besselian elements which are given for every ten minutes of Greenwich mean time. Their geometric signification is as follows:—

Let us imagine a plane passing through the centre of the earth, perpendicular to the right line joining the centres of the sun and moon. This latter line is the axis of the moon's shadow, and the plane is called the *fundamental plane.* We take the intersection of this plane with that of the earth's equator as the axis of X, and the centre of the earth as the origin of co-ordinates. The axis of Y is perpedicular to that of X, and directed toward the north; x and y are then the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane. The angle d, of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the shadow is directed; this direction being that from the earth toward the moon and sun. The angle μ is the Greenwich hour-angle of this same point of the celestial sphere.

The quantities l and l' are the radii of the shadow-cones upon the fundamental plane, l corresponding to the penumbra, and l' to the umbra, or annulus. The notation is that of CHAUVENET'S *Spherical and Practical Astronomy*, in which l' is regarded as positive for an annular, and negative for a total eclipse.

The angles f and f', the tangents of which are given, are the angles which the elements of the respective shadow-cones make with the axis of the shadow; or, they are the semi-angles of the two cones.

At the bottom of the table are given the logarithms of the change of x, y and μ, in one minute, in order to facilitate the interpolation to any required moment.

The method of computing the eclipse from the given elements is as follows: It is premised that the moments of beginning and ending are those at which the distance of the observer from the axis of the shadow or penumbra is equal to the radius of the latter at the point of observation. To find such distance and radius we compute—

(1) The co-ordinates, ξ, η and ζ, of the observer, at some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase, together with their variations for one minute.

(2) The co-ordinates x and y of the axis of the shadow at the same moment, which, with their variations for one minute, are taken from the tables of elements.

(3) Hence, the position and motion of the observer relative to the axis of the shadow.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follow:—

(1) Find the geocentric co-ordinates of the station referred to the earth's equator, which are represented by $\rho \cos \varphi'$ and $\rho \sin \varphi'$, ρ being the distance from the centre of the earth, and φ' the geocentric latitude. These may be obtained from geodetic tables, or may be computed from the following table by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Co-ordinates of a Place.

φ	Log F.		Log G.	
0°	0.00000		0.00295	
5	0.00001	1	0.00294	1
10	0.00004	3	0.00291	3
15	0.00010	6	0.00285	6
20	0.00017	7	0.00278	7
25	0.00026	9	0.00269	9
30	0.00037	11	0.00258	11
35	0.00048	11	0.00247	11
40	0.00061	13	0.00234	13
45	0.00074	13	0.00221	13
50	0.00086	12	0.00209	12
55	0.00099	13	0.00196	13
60	0.00111	12	0.00184	12
65	0.00121	10	0.00174	10
70	0.00130	9	0.00165	9
75	0.00138	8	0.00157	8
80	0.00143	5	0.00152	5
85	0.00146	3	0.00149	3
90	0.00147	1	0.00147	2

For the assumed Greenwich mean time of computation, take from the table of elements the values of sin d, cos d, and μ. Put:

λ, the longitude west from Greenwich. The co-ordinates of the observer will then be:—

$$\xi = \rho \cos \varphi' \sin (\mu - \lambda)$$
$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda)$$
$$\zeta = \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda)$$

and their variations in one minute of mean time will be:—

$$\xi' = [7.63992]\, \rho \cos \varphi' \cos (\mu - \lambda)$$
$$\eta' = [7.63992]\, \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992]\, \xi \sin d$$

ζ' is not wanted.

(2) The co-ordinates x and y of the axis of the shadow are taken from the tables of elements for the same assumed moment of Greenwich mean time, together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. The variations for one minute we represent by x' and y'. Their logarithms are given at the foot of the tables.

(3) The distance m and position-angle M of the axis of the shadow relative to the observer, and the relative motions, n and N, are computed by the formulæ:—

$$m \sin M = x - \xi$$
$$m \cos M = y - \eta$$
$$n \sin N = x' - \xi'$$
$$n \cos N = y' - \eta'$$

(4) The radius L of the shadow or penumbra at the distance ζ from the fundamental plane is computed by the formula

$$L = l - \zeta \tan f$$

l and f being found in the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or end of the eclipse, we shall have—

$$m = L$$

But, as this condition can scarcely ever be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ψ from the equation,

$$\sin \psi = \frac{m \sin (M - N)}{L}$$

There will be two values to this angle, of which one will be in the first and the other in the second quadrant when sin ψ is positive, and one in the third and the other in the fourth when sin ψ is negative. But, simplicity will be gained by taking only that value of ψ for which cos ψ is positive. This value lies between the limits + 90° and − 90°. The correction τ to the assumed time will be found in minutes, from—

For beginning: $$\tau = -\frac{m \cos (M - N)}{n} - \frac{L \cos \psi}{n}$$

For ending: $$\tau = -\frac{m \cos (M - N)}{n} + \frac{L \cos \psi}{n}$$

One such pair of values of τ cannot, however, give the times of both beginning and ending with accuracy. To attain accuracy we must, in commencing the computation, assume two times, one near that of beginning, and another near that of ending. These approximate times may be derived from the chart of the eclipse. The computation for the first assumed time will give a small value of τ which, applied to the assumed time, will give a nearly correct time for the beginning of the eclipse, and a large value which, added to the assumed time, will give an inaccurate time of ending. The computation for the second assumed time will give a small and nearly correct value of τ, to be applied to the assumed time for the end, and a large negative and inaccurate one to be subtracted for the beginning. We shall thus deduce two times of each phase, only one of which is to be considered approximately correct

The more accurate times of beginning and ending may now be taken in place of the first assumed ones, and the computation may be repeated from the beginning, leading to a pair of values of τ, which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors. The following theorem will, however, enable us to obtain a second approximation to the true times of each phase without repeating the computation.

THEOREM.—*The error of each result is approximately proportional to the square of the correction* τ, *multiplied by the sine of the sun's hour-angle,* $(\mu-\lambda)$, *for the middle of the interval between the time of computation and that of the phase.*

To apply this theorem we find the two values of $\tau^2 \sin(\mu-\lambda)$ corresponding to the required phase. We then find the ratio of these quantities—which will commonly be a large number, and divide the difference of the results by this ratio. The quotient will be a correction to be applied to the more accurate result in such a way as to make it deviate yet more from the less accurate one. This correction should be positive in the local forenoon, and negative in the afternoon, and its value should never materially exceed $0^{m}.001\,\tau^2$.

Unless the times chosen for computation are unusually in error, say ten minutes or more, the corrected results thus obtained will be theoretically correct within less than a second. But to guard against numerical errors it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, further corrections and computations may be made by the computor according to his own judgment.

It may be remarked that the uncertainty of the ephemerides is such that a prediction may be several seconds in error from this unavoidable cause alone.

Position-angle of Point of Contact.—The position-angle P, of the point of contact, reckoned from the north point of the sun's limb toward the east, is found by the formula

For beginning: $P = N - \psi \pm 180°$
For end: $P = N + \psi$

it being assumed that, in each case, the value of ψ is taken between the limits ± 90°.

Computation of the Solar Eclipse of 1896, Aug. 8, for Akishi, Japan, whose position is—

$$\text{Latitude,}\quad \varphi = +\ 43°\ 2'\ 22''$$
$$\text{Longitude,}\quad \lambda = -\ 144\ 51\ 50$$

Constants for the given place:—

$$\rho \sin \varphi' = 9.83180$$
$$\rho \cos \varphi' = 9.86450$$

From the Eclipse Charts we find the approximate times of the phases to be—

	d	h	m	
Beginning August	8	16	30	Greenwich Mean Time.
Total Phase		17	40	
Ending		18	45	

	Beginning.	Total Phase.	Ending.
Greenwich Mean Time, August	$8^d\ 16^h\ 30^m$	$17^h\ 40^m$	$18^h\ 45^m$
	° ′ ″	° ′ ″	° ′ ″
μ	246 11 0	263 41 12	279 56 24
λ	−144 51 50	−144 51 50	−144 51 50
$\mu-\lambda$	31 2 50	48 33 2	64 48 14
$\rho \cos \varphi'$	9.86450	9.86450	9.86450
$\sin(\mu-\lambda)$	9.71243	9.87479	9.95658
$\log \xi$	9.57693	9.73929	9.82108
ξ	+ 0.37751	+ 0.54864	+ 0.66234

		Beginning.	Total Phase.	Ending.
Greenwich Mean Time,	August	8^d 16^h 30^m	17^h 40^m	18^h 45^m
	$\rho \sin \varphi'$	9.83180	9.83180	9.83180
	$\cos d$	9.98340	9.98343	9.98346
		9.81520	9.81523	9.81526
	(1)	+ 0.65343	+ 0.65347	+ 0.65351
	$\rho \cos \varphi'$	9.86450	9.86450	9.86450
	$\sin d$	9.43339	9.43303	9.43270
	$\cos (\mu - \lambda)$	9.93285	9.82083	9.62912
		9.23074	9.11836	8.92632
	(2)	+ 0.17011	+ 0.13133	+ 0.08440
(1)—(2)	η	+ 0.48332	+ 0.52214	+ 0.56911
	$\rho \sin \varphi' \sin d$	9.26519	9.26483	9.26450
	(3)	+ 0.18416	+ 0.18401	+ 0.18387
	$\rho \cos \varphi' \cos d \cos (\mu - \lambda)$	9.78075	9.66876	9.47708
	(4)	+ 0.60360	+ 0.46640	+ 0.29997
(3) + (4)	ζ	+ 0.78776	+ 0.65041	+ 0.48384
	const. log	7.63992	7.63992	7.63992
	$\rho \cos \varphi' \cos (\mu - \lambda)$	9.79735	9.68533	9.49362
	$\log \xi'$	7.43727	7.32525	7.13354
	ξ'	+ 0.002737	+ 0.002115	+ 0.001360
	const. log	7.63992	7.63992	7.63992
	$\xi \sin d$	9.01032	9.17232	9.25378
	$\log \eta'$	6.65024	6.81224	6.89370
	η'	+ 0.000447	+ 0.000649	+ 0.000783
	$x - \xi$	— 0.44089	— 0.00646	+ 0.44205
	$y - \eta$	+ 0.30125	+ 0.00221	— 0.28671
	$x' - \xi'$	+ 0.005915	+ 0.006536	+ 0.007288
	$y' - \eta'$	— 0.004162	— 0.004369	— 0.004508
	$m \sin M$	9.64433 *n*	7.81023 *n*	9.64547
	$m \cos M$	9.47893	7.34439	9.45744 *n*
	$\tan M$	0.16540 *n*	0.46584 *n*	0.18803 *n*
	M	304° 20′ 40″	288° 53′ 10″	122° 58′ 2″
	$\cos M$	9.75141	9.51013	9.73573 *n*
	$\log m$	9.72752	7.83426	9.72171
	$n \sin N$	7.77195	7.81531	7.86261
	$n \cos N$	7.61930 *n*	7.64038 *n*	7.65398 *n*
	$\tan N$	0.15265 *n*	0.17493 *n*	0.20863 *n*
	N	125° 7′ 53″	123° 45′ 39″	121° 44′ 19″
	$\cos N$	9.76001 *n*	9.74486 *n*	9.72103 *n*
	$\log n$	7.85929	7.89552	7.93295
	$\tan f$	7.66407	7.66191	7.66408
	$\log \zeta$	9.89639	9.81319	9.68470
		7.56046	7.47510	7.34878
	$\zeta \tan f$	+ 0.00363	+ 0.00299	+ 0.00223
	l	+ 0.53901	— 0.00698	+ 0.53876
	L	+ 0.53538	— 0.00997	+ 0.53653

	Beginning.	Total Phase.	Ending.
Greenwich Mean Time, August	$8^d\ 16^h\ 30^m$	$17^h\ 40^m$	$18^h\ 45^m$
$M - N$	179° 12′ 47″	165° 7′ 31″	1° 13′ 43″
$\sin(M - N)$	8.13781	9.40944	8.33126
$\log m$	9.72752	7.83426	9.72171
colog L	0.27134	2.00130 *n*	0.27041
$\sin \psi$	8.13667	9.24500 *n*	8.32338
ψ	0° 47′ 6″	− 10° 7′ 30″	1° 12′ 23″
$\log \frac{m}{n}$	1.86823	9.93874	1.78876
$\cos(M - N)$	9.99996 *n*	9.98520 *n*	9.99990
	1.86819 *n*	9.92394 *n*	1.78866
$-\frac{m}{n}\cos(M - N)$	+73.823	+ 0.839	−61.470
$\log L$	9.72866	7.99870 *n*	9.72959
$\cos \psi$	9.99996	9.99318	9.99990
colog n	2.14071	2.10448	2.06705
	1.86933	0.09636 *n*	1.79654
$\frac{L \cos \psi}{n}$	∓74.017	∓ 1.248	± 62.596
	m	m	m
τ	− 0.194	− 0.409 + 2.087	+ 1.126
	h m	h m	h m
T	16 30	17 40	18 45
	d h m	h m	h m
t	Aug. 8 16 29.806	17 39.591 17 42.087	18 46.126
λ	− 9 39.456	− 9 39.456	− 9 39.456
	d h m	d h m	d h m
Local Mean Time,	August 9 2 9.262	Aug. 9 3 19.047 3 21.543	Aug. 9 4 25.582
		m	
Duration of Totality,		2.496	

No correction is necessary since the assumed times differ very little from the computed ones.

Therefore we have

		d	h	m	s	
Beginning of the eclipse,	August	9	2	9	15.7	Local Mean Time.
Beginning of total eclipse,	"	9	3	19	2.8	
End of total eclipse,	"	9	3	21	32.6	
End of the eclipse,	"	9	4	25	34.9	

Angle of position:

	Beginning.	Ending.
N	125° 7′.9	121° 44′.3
$\psi\ (+ 180)$	180 47.1	1 12.4
P	304 20.8	122 56.7

from the north point of the sun's disk towards the east for direct image.

Elements of Occultations.—Pages 418—451 give the elements for the prediction of the times of occultation of stars and planets by the moon. In the columns referring to the star, those headed *Red'ns from* 1896.0 give the quantities necessary to reduce the mean place of the star at the beginning of 1896 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

The quantities in the following five columns are all given for the moment of geocentric conjunction of the star and moon in right ascension. Let there be a line passing from the star through the centre of the moon, and let a plane perpendicular to this line pass through the centre of the earth: this plane will be the fundamental plane for the occultation. The system of co-ordinates is similar to that already described for eclipses. The cone circumscribing the moon and star may be regarded as a cylinder having everywhere the same diameter as the moon. This cylinder will intercept the fundamental plane in a circle of which the linear diameter will be the same as that of the moon.

The *Washington Mean Time* is the moment at which the two bodies are in geocentric conjunction in right ascension. At this moment the co-ordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour-Angle H* gives the common geocentric hour-angle of the moon and star at the same moment, counted from the meridian of Washington—positive toward the west and negative toward the east. Column Y gives the co-ordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the hourly variation of x and y. The linear unit in these columns is the earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the Washington mean time of immersion and emersion of a star behind the limb of the moon may be computed for any part of the earth by a method nearly the same as that already explained for computing eclipses, only more simple.

We shall first show how to compute an isolated occultation for a particular place, assuming it to be visible at that place, and then show how all the occultations which will be visible at a place may be selected and computed by a more rapid process.

(1) The geocentric co-ordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed with three or four places of decimals by the formulæ,

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

$$\rho \cos \varphi' = F \cos \varphi$$

already given in connection with eclipses.

As in the case of eclipses, it is necessary to have an approximate time of the phenomenon, corresponding to that obtained from the charts of the eclipses. The quantity H being the Washington west hour-angle of the two bodies at the moment of geocentric conjunction, $H-\lambda$ will be the local hour-angle of the star at this same moment. Let us call this angle h_0, putting

$$h_0 = H - \lambda$$

where λ is the longitude west of *Washington.*

The next step will then be to find the approximate moment of apparent conjunction in right ascension as seen from the place. An approximate correction to reduce the time and hour-angle for geocentric conjunction to those for apparent conjunction may be taken from Mr. DOWNES's table, on pages 454—455. This correction will have the same sign as h_0.

When this table is not available, the correction may be computed thus: Compute the quantities ξ_0, ξ' and τ from the formulæ,

$$\xi_0 = \rho \cos \varphi' \sin h_0$$

$$\xi' = [9.4192] \cos (h_0 + \tfrac{1}{3} h_0)$$

$$\tau = \frac{\xi_0}{x' - \xi'}$$

τ will then be the approximate interval between the times of geocentric and local conjunction. By applying it to the Washington mean time of the former, as given with the elements, we shall have the Washington mean time of the latter within a few minutes.

The average duration of an occultation is about an hour. Thence, by adding $0^h.5$ to and subtracting it from the mean time of apparent conjunction, we shall have approximate times of the phases of immersion and emersion for farther computation. Let us then put,

$$\tau_1 = \tau - 0^h.5$$
$$\tau_2 = \tau + 0^h.5$$

T, the Washington mean time of geocentric conjunction in R. A.
d, the declination of the star.

(2) Compute for the moments $T + \tau_1$ and $T + \tau_2$ the following quantities, in which we write τ for each of the quantities τ_1 and τ_2. The latter, when used as angles, are to be changed to arc by multiplying by 15, and the minutes are to be further increased by one-sixth the number of degrees in order to reduce to the sidereal hour-angle.

$$\xi = \rho \cos \varphi' \sin (h_0 + \tau)$$
$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (h_0 + \tau)$$
$$\xi' = [9.41916]\, \rho \cos \varphi' \cos (h_0 + \tau)$$
$$\eta' = [9.41916]\, \rho \cos \varphi' \sin d \sin (h_0 + \tau) = [9.41916]\, \xi \sin d$$
$$x = x' \tau$$
$$y = Y + y' \tau$$

Compute m, M, n and N from the equations

$$m \sin M = x - \xi$$
$$m \cos M = y - \eta$$
$$n \sin N = x' - \xi'$$
$$n \cos N = y' - \eta'$$
$$n' = \frac{n}{60} = [8.22185]\, n$$
$$\sin \psi = [0.56500]\, m \sin (M - N)$$

Then, t_1 and t_2 from the equations

$$t_1 = -\frac{m}{n'} \cos (M - N) - \frac{[9.43500]}{n'} \cos \psi \quad \text{(Beginning.)}$$
$$t_2 = -\frac{m}{n'} \cos (M - N) + \frac{[9.43500]}{n'} \cos \psi \quad \text{(End.)}$$

The quantities t_1 and t_2 will then be the corrections in minutes to be applied to the respective times $T + \tau_1$ and $T + \tau_2$ to obtain the Washington mean times of the phases.

As in the case of eclipses, the small value of t_1 will give an accurate result for one phase, and the large value an inaccurate result for the other. Both accurate results may then be corrected by comparison with the inaccurate one, in the way described for eclipses, and a result obtained which will probably be correct within a fraction of a minute of time.

As a check upon the result, it will be advisable to compute ξ, η, x and y for the moments finally obtained. If the times are correct these quantities will fulfil the condition,

$$\sqrt{(x - \xi)^2 + (y - \eta)^2} = 0.27227$$

If $\log m \sin (M - N) = 9.43500$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\sin \psi < 1$, or $\sin \psi > 1$. In the latter case, the impossible value of $\sin \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the ephemerides of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 90°$, or $270°$, according as $\sin (M - N)$ is positive or negative; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M - N)}{n'}$$

Putting π for the moon's horizontal parallax, the distance from the moon's limb will be,

$$\pi\ [m \sin (M - N) - 0.27227]$$

disregarding the sign of $\sin (M - N)$; or, allowing for the augmentation of the semidiameter,

$$\pi\ [m \sin (M - N) - 0.27227]\ [1 + z \sin \pi]$$

where

$$z = \rho \cos \varphi' \cos d \cos (h_0 + \tau) + \rho \sin \varphi' \sin d$$

The position-angle P, of the line from the moon's centre to the star at the times of contact, reckoned from the north point toward the east, is given by the formulæ:—

$P = N - \psi$ for immersion,

$P = N + \psi \pm 180°$ for emersion,

it being supposed that the value of ψ, in each case, is taken between the limits ± 90°.

To find the angle from the vertex, we compute the angle C from the formula,

$$\tan C = \frac{\xi + t\,\xi'}{\eta + t\,\eta'}$$

in which the value of t corresponding to the phase is to be used. Then

$$V = P - C$$

is the angle from the vertex, also reckoned from the north toward the east.

As an example of an isolated occultation, we will compute that of 13 Piscium, on Sept. 20, 1896, for Mount Hamilton, whose position is

$$\varphi = +\ 37°\ 20'\ 23''.5$$
$$\lambda = +\ 2^h\ 58^m\ 22^s.05$$

Constants for the given place,

$$\rho \sin \varphi' = 9.78045$$
$$\rho \cos \varphi' = 9.90094$$

From the elements on page 441, we have

$$H = +\ \overset{h}{3}\ \overset{m}{19.3}$$
$$h_0 = H - \lambda = +\ 0\ 20.932$$

From DOWNES's Table, pages 454 and 455, or from the formulæ on page 514, we find the correction to the Washington mean time of geocentric conjunction to be about $+\ 15^m$, therefore the Washington mean time of apparent conjunction at the given place is Sept. $20^d\ 14^h\ 58^m.2$; adding and subtracting 30^m, we shall have the approximate Washington mean times of immersion and emersion to be used in the computation, thus:

$$\tau_1 = -\ \overset{h}{0}\ \overset{m}{15} \qquad T + \tau_1 = \text{Sept. } \overset{d}{20}\ \overset{h}{14}\ \overset{m}{28.2}$$
$$\tau_2 = +\ 0\ 45 \qquad T + \tau_2 = \phantom{\text{Sept. }} 20\ 15\ 28.2$$

Washington Mean Time,	September	Immersion.	Emersion.
		$20^d\ 14^h\ 28^m.2$	$15^h\ 28^m.2$
		h m	h m
	h_0	+ 0 20.932	+ 0 20.932
	τ (in sidereal time)	− 0 15.041	+ 0 45.123
	$h_0 + \tau$ (in arc)	+1° 28′ 22″	+16° 30′ 49″
	$\rho \cos \varphi'$	9.90094	9.90094
	$\sin (h_0 + \tau)$	8.40997	9.45369
	$\log \xi$	8.31091	9.35463
	ξ	+ 0.02046	+ 0.22627

		Immersion.	Emersion.
ashington Mean Time,	September	$20^d\ 14^h\ 28^m.2$	$15^h\ 28^m.2$
	$\rho \sin \varphi'$	9.78045	9.78045
	$\cos d$	9.99982	9.99982
		9.78027	9.78027
	(1)	+ 0.60293	+ 0.60293
	$\rho \cos \varphi'$	9.90094	9.90094
	$\sin d$	8.46010 *n*	8.46010 *n*
	$\cos (h_0 + \tau)$	9.99986	9.98171
		8.36090 *n*	8.34275 *n*
	(2)	− 0.02296	− 0.02202
(1)−(2)	η	+ 0.62589	+ 0.62495
	const. log	9.41916	9.41916
	$\rho \cos \varphi' \cos (h_0 + \tau)$	9.90080	9.88265
	$\log \xi'$	9.31996	9.30181
	ξ'	+ 0.20891	+ 0.20036
	const. log	9.41916	9.41916
	$\xi \sin d$	6.77101 *n*	7.81473 *n*
	$\log \eta'$	6.19017 *n*	7.23389 *n*
	η'	− 0.00015	− 0.00171
	$\log x'$	9.68878	9.68878
	$\log \tau$	9.39794 *n*	9.87506
	$\log x$	9.08672 *n*	9.56384
	x	− 0.12210	+ 0.36630
	$\log y'$	9.41095	9.41095
	$\log y' \tau$	8.80889 *n*	9.28601
	$y' \tau$	− 0.06440	+ 0.19320
	Y	+ 0.75310	+ 0.75310
	y	+ 0.68870	+ 0.94630
	$x - \xi$	− 0.14256	+ 0.14003
	$y - \eta$	+ 0.06281	+ 0.32135
	$x' - \xi'$	+ 0.27949	+ 0.28804
	$y' - \eta'$	+ 0.25775	+ 0.25931
	$m \sin M$	9.15400 *n*	9.14622
	$m \cos M$	8.79803	9.50698
	$\tan M$	0.35597 *n*	9.63924
	M	293° 46′ 39″	23° 32′ 43″
	$\sin M$	9.96148 *n*	9.60149
	$\log m$	9.19252	9.54473
	$n \sin N$	9.44637	9.45945
	$n \cos N$	9.41120	9.41382
	$\tan N$	0.03517	0.04563
	N	47° 19′ 2″	48° 0′ 16″
	$\sin N$	9.86635	9.87110
	$\log n$	9.58002	9.58835
	colog 60	8.22185	8.22185
	$\log n'$	7.80187	7.81020

		Immersion.	Emersion.
Washington Mean Time,	September	$20^d\ 14^h\ 28^m.2$	$15^h\ 28^m.2$
	const. log	0.56500	0.56500
	log m	9.19252	9.54473
	sin $(M - N)$	9.96226 n	9.61704 n
	sin ψ	9.71978 n	9.72677 n
	ψ	$-31° 38' 14''$	$-32° 12' 42''$
	log $\frac{m}{n'}$	1.39065	1.73453
	cos $(M - N)$	9.60139 n	9.95917
		0.99204 n	1.69370
		m	m
	$-\frac{m}{n'}$ cos $(M - N)$	+ 9.818	− 49.397
	const. log	9.43500	9.43500
	colog n'	2.19813	2.18980
	cos ψ	9.93012	9.92741
		1.56325	1.55221
		m	m
	$\frac{[9.43500] \cos \psi}{n'}$	− 36.581	+ 35.663
	t	− 26.763	− 13.734
		d h m	h m
	T	Sept. 20 14 28.200	15 28.200
Washington Mean Time of Phase,		Sept. 20 14 1.437	15 14.466
	λ	2 58.368	2 58.368
Mount Hamilton Mean Time,		Sept. 20 11 3.069	12 16.098
Angle of position:		° ′	° ′
	N	47 19.	48 0.3
	ψ $(+ 180°)$	− 31 38.2	− 32 12.7
	P	78 57.2	195 47.6

from the north point of the moon's limb toward the east for direct image.

Prediction of Many Occultations for a Given Place.—When it is desired to predict all the occultations which will be visible at some one place, tables may be constructed and applied in such a way as to greatly diminish the labor of computation. In using such tables, the most convenient course will be to find for each occultation the hour-angle of the star at the moment of apparent conjunction in right ascension, as seen from the place of observation. The table of elements, pages 418—451, gives H, the Washington hour-angle at the moment of geocentric conjunction. The corresponding geocentric hour-angle at the place will be

$$h_0 = H - \lambda \quad (\lambda = \text{west longitude from Washington}).$$

The moment of apparent conjunction, as seen from the station, will be given by the condition $\xi = x$; or, using the values of ξ and x,

$$\rho \cos \varphi' \sin h = x' \tau$$

h being the west hour-angle of the star at the moment in question, and τ the interval, in hours of mean time, which has elapsed since geocentric conjunction. We shall therefore have,

$$h = h_0 + \tau$$

for the hour-angle at the end of the interval τ after geocentric conjunction. In strictness, τ should here be multiplied by the factor $1+\frac{1}{365.25}$, because the star moves a little more than 15° in an hour of mean time; but the error arising from the neglect of the factor is too small to be important, as it will affect the predicted time of conjunction by less than 10 seconds. The equation for finding τ is therefore,

$$\rho \cos \varphi' \sin (h_0 + \tau) = x' \tau$$

The quantities h_0 and x' being derived immediately from the data of the Ephemeris, the quantity τ is readily obtained by successive approximation, and may be tabulated as a function of h_0 and x'. The computation of τ is effected as follows. We have

$$\sin (h_0 + \tau) = \sin h_0 + 2 \sin \tfrac{1}{2} \tau \cos (h_0 + \tfrac{1}{2} \tau) \tag{1}$$

The value of τ in arc being seldom more than 24° we may put τ itself for $2 \sin \frac{1}{2} \tau$. The equation will then become

$$\rho \cos \varphi' \sin h_0 + \tau \rho \cos \varphi' \cos (h_0 + \tfrac{1}{2} \tau) = x' \tau$$

from which we find

$$\tau = \frac{\rho \cos \varphi' \sin h_0}{x' - \rho \cos \varphi' \cos (h_0 + \frac{1}{2} \tau)} \tag{2}$$

To tabulate τ, we must first have a table of the quantities

$$\begin{aligned} \xi &= \rho \cos \varphi' \sin h \\ \xi' &= [9.41916]\, \rho \cos \varphi' \cos h \end{aligned} \tag{3}$$

which table may be formed for every 10 minutes (in time) of h. If we then put ξ_0 for the value of ξ corresponding to $h = h_0$ and ξ'_1 for the value of ξ' corresponding to $h = h_0 + \frac{1}{2}\tau$, we shall have

$$\tau = \frac{\xi_0}{x' - \xi'_1} \tag{4}$$

Since we must know the value of τ, approximately, before we can take ξ'_1 from the table, this equation can be solved only by successive approximations The approximations converge so rapidly as to offer no difficulty. It will be best to begin by comparing values of τ for the two extremes of x', namely, $x' = 0.48$ and $x' = 0.60$, because the approximate values of τ can then be interpolated for all the intermediate values of x' For the first approximation may be taken—

$$\begin{aligned} \tfrac{1}{2} \tau &= 50^m \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.48) \\ \tfrac{1}{2} \tau &= 40^m \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.60) \end{aligned} \tag{5}$$

or, the approximate values of τ may be taken from Mr. DOWNES's table, pages 454–455. It will be best to make the computation for every 30^m of h_0, and to find the intermediate values of τ for every 10^m by interpolation. Then for each 30^m of h_0 we take ξ' from a table with the argument $h_0 + \frac{1}{2}\tau$, and log ξ with the argument h_0, and thence compute τ by (4). If the value of τ thus arrived at differs more than 3^m from that employed in taking out ξ', a new value may be used to correct ξ', and the computation may be repeated. The values corresponding to $x' = 0.51$, $x' = 0.54$, and $x' = 0.57$, can then be computed with the single interpolation of approximate values of τ, and afterward the table can be extended by interpolation to every 0.01 of x' between $x' = 0.48$ and $x' = 0.60$. It will be best to compute τ in the first place to every 0.001 of an hour, and to drop the last figure in forming the definitive table. The table thus formed will be called *Table I.*

The values of η and η' may then be tabulated for every degree of the star's declination, and every 10^m of h. It is a mere question of convenience whether to compute the table for negative values of d, since by putting

$$\eta_1 = \rho \sin \varphi' \cos d$$
$$\eta_2 = -\rho \cos \varphi' \sin d \cos h$$

η_1 may be given in a table of single-entry; and taking η_2 from the table of double-entry for a positive d, we shall have

$$\eta = \eta_1 \pm \eta_2$$

the lower sign being used for a negative d. But the extension of the table for η to negative values of d is so readily made that it will probably be found better to do it, so as to save taking out η_1 and η_2 separately.

This table for η will be called *Table II*, and the corresponding one for η' with the same arguments *Table III*. The precepts for using the tables will then be as follow:—

From Table I with the arguments x' and $H - \lambda = h_0$ take out the value of τ. It will be sufficient to use the nearest 0.01 of x'. τ will be of the same sign as h_0. Then, enter Table II with the arguments d (the star's declination) and $h = h_0 + \tau$, and take out the value of η. Form the quantities $y = Y + y'\tau$, and $y - \eta$. If the latter quantity lies between the limits $\pm$ 0.28, it is almost certain that there will be an occultation. If it falls without the limits $\pm$ 0.33, it is almost certain that there will not be an occultation. A convenient rule to adopt will be—

$$y' < 0.10, \text{ limits } = \pm 0.29$$
$$0.10 < y' < 0.15, \text{ limits } = \pm 0.30$$
$$0.15 < y' < 0.20, \text{ limits } = \pm 0.31$$
$$0.20 < y' \quad \text{ limits } = \pm 0.33$$

Here, only the absolute value of y' is to be considered, without respect to its algebraic sign.

If $y - \eta$ falls between the limits thus indicated, take the values of ξ' and η' from the appropriate tables and compute v, Q and $\triangle$ from the equations

$$v \sin Q = y' - \eta'$$
$$v \cos Q = x' - \xi'$$
$$\triangle = (y - \eta) \cos Q$$

If $\triangle > 0.2723$ or $\log \triangle > 9.4350$ there will be no occultation, though the moon may graze the star when $\triangle - 0.2723$ is very small. If $\triangle < 0.2723$, compute

$$\tau_1 = -\frac{y - \eta}{v} \sin Q \qquad \cos P = \frac{\triangle}{0.2723} \quad (P < 180^\circ)$$

$$\tau_2 = \frac{0.2723 \sin P}{v}$$

We shall then have—

Local mean time of immersion, $T - \lambda + \tau + \tau_1 - \tau_2$
Local mean time of emersion, $T - \lambda + \tau + \tau_1 + \tau_2$

Position-angle from north toward east at immersion, $180^\circ - Q - P$
Position-angle from north toward east at emersion, $180^\circ - Q + P$

In predicting the occultations for a given place, the first operation will be to go over the list of occultations in the Ephemeris, and select those which may be visible. The conditions of possible visibility are:—

1. The limiting parallels in the last columns must include the latitude of the place.

2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semi-diurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east horizon, or an immersion in the west, when this difference is a few minutes less than an hour.

3. The sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the day time.

The most convenient course will be to write the value of $-\lambda$ on the bottom of a sheet of paper, and passing through the list of occultations, pause over each one for which condition (1) is fulfilled, and examine whether conditions (2) and (3) are fulfilled. If either fails, the computer passes on. Very often it will require some examination to find whether $H - \lambda$ or $T - \lambda$ falls within the limits; in these cases, the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

Phenomena of Planets and Satellites, pages 456—489.—These are, for the most part, sufficiently explained in the body of the work. The following additional explanations are added for completeness :—

Disks of Mercury and Venus, pages 456—457.—The angle θ, needed in reducing meridian observations, is the angle which the arc of the great circle from the planet to the sun, makes with the arc from the planet toward the west, reckoned in the direction west, north, east, south. This position-angle is reckoned from 0° to 360°, as in the measurement of double stars, the planet taking the place of the central star. But its measure is 90° greater than that of a double star.

We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Satellites and Disk of Mars, page 458.—This page gives the Washington mean time of the greatest eastern and western elongations, the position-angles, and the distance of the satellites from the centre of the planet during the month preceding and following opposition.

Satellites of Jupiter, pages 459—483.—The times of phenomena are explained at the foot of each page ; the diagram is on page 459.

Phenomena, pages 490—491.—The conjunctions, quadratures, and oppositions of the planets with respect to the sun, give the hours when the longitude of each planet differs from that of the sun by 0°, 90°, or 180°.

The conjunctions of the moon and planets with each other are given in right ascension. The degrees and minutes to the right show the difference of declination at the moment of conjunction.

Latitude by Observed Altitude of Polaris.—Table IV replaces the Tables A, B, C, D, given as a *Supplement* to the volumes of the Ephemeris for 1874—1881, and is intended for use at sea and reconnaissance on land. It will furnish an approximate value of the latitude, the probable error of which, in so far as the table is concerned, will be a few tenths of a minute of arc.

The directions for using the table are adapted to a right ascension of Polaris equal to $1^h\ 21^m.1$. Somewhat greater accuracy may be insured by substituting the right ascension of Polaris at the date of observation, from pages 302—313 of this volume.

APPENDIX.

ON THE CONSTRUCTION OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC FOR 1896.

THE adopted constants of precession, nutation, and aberration are those of STRUVE and PETERS, namely:—

$$\begin{aligned} \text{Precession} &= 50''.2411 + 0''.0002268\, t \\ \text{Nutation} &= 9''.2231 + 0''.000009\, t \\ \text{Aberration} &= 20''.4451 \end{aligned}$$

in which t is the number of years after 1800.0.

The obliquity of the ecliptic is that of HANSEN'S *Tables du Soleil*, which is 0″.27 greater than that of PETERS, given in the issues of this Ephemeris preceding that for 1882. A comparison of HANSEN'S mean obliquity with that of PETERS and of LE VERRIER at different epochs is given in the following table:—

Epoch.	HANSEN.			PETERS.	LE VERRIER.	H.—P.	H.—L.
	°	′	″	″	″	″	″
1750	23	28	18.19	17.44	19.42	+ 0.75	— 1.23
1800	23	27	54.80	54.22	55.63	+ 0.58	— 0.83
1850	23	27	31.42	30.99	31.83	+ 0.43	— 0.41
1900	23	27	8.02	7.76	8.03	+ 0.26	— 0.01

The formulæ for reducing the places of the fixed stars, page 280, correspond to the *Star Tables of the American Ephemeris*, Washington, 1869.

The mean right ascensions of stars have been reduced to NEWCOMB'S fundamental standard in the catalogue attached to the *Washington Observations for 1870*, Appendix II, with the following exceptions: The right ascensions of the 48 circumpolar stars north of 60° north declination are from Dr. GOULD'S *Standard Places of Fundamental Stars*, second edition, United States Coast Survey Office, 1866. Of the twelve stars south of 50° south declination, the positions of β Hydri, α Trianguli Australis, and σ Octantis, have been corrected from data furnished by Dr. GOULD; while the remaining nine are, as before, from the *British Nautical Almanac* for 1848.

The right ascensions of the additional stars in the general list, whose apparent right ascensions are given in a subsequent section, have been taken partly from the *Catalogue of 1098 Standard Clock and Zodiacal Stars*, forming Part IV of Vol. I of *Astronomical Papers Prepared for the Use of the American Ephemeris and Nautical Almanac*, Washington, 1881; and partly from the catalogue of the Astronomische Gesellschaft of 1878. A few have been derived from recent catalogues without a rigorous reduction for equinox.

The mean declinations of stars are taken from Boss's paper in the *Report of the Northern Boundary Commission*, Washington, 1879, for all stars found therein. The declinations of all the other stars have been reduced to the same standard, except those of the additional ones above, which have been taken partly from the Astronomische Gesellschaft list, and partly from places in recent catalogues. To the apparent places of Sirius and Procyon have been applied the periodic corrections resulting from AUWERS'S investigations.

The values of these corrections are :—

Year.	Sirius.		Procyon.	
	s		s	
1896.0	$\Delta \alpha = + 0.092$	$\Delta \delta = + 1.39$	$\Delta \alpha = + 0.070$	$\Delta \delta = - 0.08$
1897.0	$\Delta \alpha = + 0.068$	$\Delta \delta = + 1.44$	$\Delta \alpha = + 0.068$	$\Delta \delta = - 0.24$

The ephemeris of the sun is constructed from HANSEN *and* OLUFSEN'S *Tables du Soleil*, Copenhagen, 1853, except that STRUVE'S aberration has been used. This is equivalent to adding $0''.19$ to the true longitudes, but it does not affect the right ascensions and declinations. The sun's rectangular equatorial co-ordinates have been computed from the longitudes and latitudes by the following formulæ :—

$$X = R \cos \lambda$$
$$Y = R \sin \lambda \cos \omega - 19.3\, R \beta$$
$$Z = R \sin \lambda \sin \omega + 44.5\, R \beta$$

The reductions to mean equinox, 1896.0, are computed by the formulæ,

$$\Delta X' = + Y \sec \omega\, \Delta \lambda \sin 1''$$
$$\Delta Y' = - X \cos \omega\, \Delta \lambda \sin 1'' + Z\, \Delta \omega \sin 1'' - 9.4\, \tau R \sin (\lambda + 187^\circ)$$
$$\Delta Z' = - X \sin \omega\, \Delta \lambda \sin 1'' - Y\, \Delta \omega \sin 1'' + 21.7\, \tau R \sin (\lambda + 187^\circ)$$

Wherein—

λ and β are the longitude and latitude of the sun referred to the equinox and ecliptic of the date ;

ω, the obliquity of the ecliptic ;

$\Delta \lambda$, the reduction of longitude for precession and nutation from January 1.0;

$\Delta \omega$, the reduction of the mean to the apparent obliquity;

τ, the fraction of the year since January 1.0.

The numerical coefficients are in units of the seventh place of decimals. The correction for latitude has been taken from GOETZE'S paper in the *Astronomical Journal*, Vol. II, page 71.

The mean equatorial horizontal parallax of the sun, adopted from Professor NEWCOMB'S *Investigation of the Distance of the Sun and the Elements which depend on it*,* is $8''.848$. The adopted semidiameter of the sun at the earth's mean distance is $16' 2''$. In the computations pertaining to eclipses, BESSEL'S semidiameter, $15' 59''.788$ has been used.

The right ascension, declination and parallax of the moon are derived from HANSEN'S *Tables de la Lune*, London, 1857, the mean longitude being corrected in accordance with NEWCOMB'S *Researches on the Motion of the Moon*, Part I, page 268,† and a corrected table being substituted for Table XXXIV.

The semidiameter of the moon is computed from the moon's horizontal parallax by the formula,

$$S = 0.272274\, \pi + 2''.5$$

The constant $2''.5$ is omitted in the computation of eclipses and occultations, as due entirely to telescopic and ocular irradiation.

The ephemeris of Mercury is derived from Professor WINLOCK'S *Tables of Mercury*, Washington, 1864. They are based on the older theory of LE VERRIER, published in the Additions to the *Connaissance des Temps* for 1848.

The ephemeris of Venus is derived from Mr. G. W. HILL'S *Tables of Venus*, Washington, 1872.

The ephemeris of Mars is derived from manuscript tables constructed from LINDENAU'S Tables. Mr. HUGH BREEN'S results, contained in his paper *On the Corrections of* LINDENAU'S *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX, have also been discussed and applied; and LE VERRIER'S secular variations of the elements are likewise adopted. The perturbations produced by Jupiter have been numerically increased by $\frac{1}{50}$ of their value. The following are the corresponding corrected elements and annual variations for Washington, 1855.0:—

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* *Astronomical Observations made at the U. S. Naval Observatory, Washington, 1865*, Appendix II.

† *Astronomical Observations made at the U. S. Naval Observatory, Washington, 1875*, Appendix II.

$$\begin{array}{lrrrcrl}
 & {}^{\circ} & {}' & {}'' & & {}'' & \\
L = & 320 & 13 & 33.87 & + & 689101.1527 & t \\
\pi = & 333 & 23 & 17.84 & + & 65.9990 & t \\
\Omega = & 48 & 25 & 55.29 & + & 27.6997 & t \\
i = & 1 & 51 & 2.20 & - & 0.02141 & t \\
e = & \multicolumn{3}{r}{19238''.75} & + & 0.18549 & t \\
n = & \multicolumn{3}{r}{689050''.8927} & & & \\
a = & \multicolumn{3}{l}{1.5236915} & & &
\end{array}$$

The ephemeris of Jupiter is derived from manuscript tables constructed from BOUVARD'S Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The ephemeris of Saturn is derived from a provisional theory constructed by Mr. GEORGE W. HILL, and still unpublished.

The ephemerides of Uranus and Neptune are derived from Professor NEWCOMB'S Tables, published by the *Smithsonian Institution.*

The semidiameters of the planets are computed from the following values:—

	Semidiameter. ″	Log Dist. ″	Authority.
Mercury	3.34	0.00	LE VERRIER, *Theory of Mercury.*
Venus	8.546 ± 0.086	0.00	PEIRCE, from the Washington Observations of 1845 and 1846, made with the Mural Circle.
Mars	2.842 ± 0.057	0.25	
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Neptune	1.28	1.48	
Jupiter (equatorial)	20.00	0.70	
Saturn (equatorial)	9.38	0.95	

The elements of eclipses of the sun and occultations of stars by the moon are given in accordance with BESSEL'S method, using the special forms in CHAUVENET'S *Spherical and Practical Astronomy.* The constants adopted for the eclipses are:—

	″
Sun's mean equatorial horizontal parallax	8.800
Semidiameter of the sun at distance unity, BESSEL . .	959.788
Ratio of radius of moon to radius of earth, BURCKHARDT .	0.27227

The eclipses of Jupiter's satellites are computed from TODD'S *Continuation of* DAMOISEAU'S *Tables*, Washington, 1876. The occultations, transits, etc., are computed from WOOLHOUSE'S Tables, *British Nautical Almanac* for 1835, Table II of each satellite having been adapted to DAMOISEAU'S Tables.

The elongations and conjunctions of the satellites of Saturn are computed from manuscript tables prepared by Professor NEWCOMB.

The apparent elements of the rings of Saturn are computed from BESSEL'S data, except those for the dusky ring.

The elongations of the satellites of Uranus, and of the satellite of Neptune are computed from the data of Professor NEWCOMB'S *Uranian and Neptunian Systems*, Washington, 1875.

In compiling the positions of observatories, the latest available data have been used. The positions have been furnished, in many instances, through the courtesy of the directors of the Observatories, in response to a circular issued by the Superintendent of the American Ephemeris.

The reduction to geocentric latitude, and the logarithm of the radius of the earth, are derived from CLARKE'S elements of the terrestrial spheroid, as adopted by the U. S. Coast and Geodetic Survey.

$$\log e = 8.9152503$$
$$\varphi' - \varphi = -11' \; 40''.43 \sin 2\varphi + 1''.19 \sin 4\varphi$$
$$\log \rho = 9.9992645 + 0.0007374 \cos 2\varphi - 0.0000019 \cos 4\varphi$$

Table IV, for finding the latitude from an observed altitude of Polaris, is constructed for—

(1) An altitude of Polaris equal to 45°.
(2) A declination of Polaris equal to + 88° 45'.4.

The principal computations of the Ephemeris have been distributed in the following manner:—

The ephemeris of the Sun was computed by Mrs. E. B. DAVIS; the Moon's longitude, latitude, semidiameter and horizontal parallax, by Professor KEITH; the right ascension and declination, by Professor VAN VLECK; the culminations, by Professor W. W. HENDRICKSON; the lunar distances, by Mr. BRADFORD; Mercury and Venus, by Mr. E. P. AUSTIN; Mars, Jupiter, Saturn, Uranus, and Neptune, by Mr. ROBERDEAU BUCHANAN; Jupiter's satellites, by Professor H. D. TODD; the satellites of Saturn, Uranus, and Neptune, by Dr. MORRISON. The mean and apparent places of the fixed stars were prepared by Mr. HEDRICK and Mr. MEIER; the general constants for their reduction, by Mr. BUCHANAN; the occultations, by Mr. AUHAGEN; and the eclipses were computed and the charts projected by Mr. BUCHANAN.

CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.

Approximate Interval.		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.

		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31

DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.

		102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	30	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	31	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	$0^{h.}$		$1^{h.}$		$2^{h.}$		$3^{h.}$		$4^{h.}$		$5^{h.}$		$6^{h.}$		$7^{h.}$		For Seconds.	
m	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	s	s
0	0	0.000	0	9.830	0	19.659	0	29.489	0	39.318	0	49.148	0	58.977	1	8.807	0	0.000
1	0	0.164	0	9.993	0	19.823	0	29.653	0	39.482	0	49.312	0	59.141	1	8.971	1	0.003
2	0	0.328	0	10.157	0	19.987	0	29.816	0	39.646	0	49.475	0	59.305	1	9.135	2	0.005
3	0	0.491	0	10.321	0	20.151	0	29.980	0	39.810	0	49.639	0	59.469	1	9.298	3	0.008
4	0	0.655	0	10.485	0	20.314	0	30.144	0	39.974	0	49.803	0	59.633	1	9.462	4	0.011
5	0	0.819	0	10.649	0	20.478	0	30.308	0	40.137	0	49.967	0	59.796	1	9.626	5	0.014
6	0	0.983	0	10.813	0	20.642	0	30.472	0	40.301	0	50.131	0	59.960	1	9.790	6	0.016
7	0	1.147	0	10.976	0	20.806	0	30.635	0	40.465	0	50.295	1	0.124	1	9.954	7	0.019
8	0	1.311	0	11.140	0	20.970	0	30.799	0	40.629	0	50.458	1	0.288	1	10.118	8	0.022
9	0	1.474	0	11.304	0	21.134	0	30.963	0	40.793	0	50.622	1	0.452	1	10.281	9	0.025
10	0	1.638	0	11.468	0	21.297	0	31.127	0	40.956	0	50.786	1	0.616	1	10.445	10	0.027
11	0	1.802	0	11.632	0	21.461	0	31.291	0	41.120	0	50.950	1	0.779	1	10.609	11	0.030
12	0	1.966	0	11.795	0	21.625	0	31.455	0	41.284	0	51.114	1	0.943	1	10.773	12	0.033
13	0	2.130	0	11.959	0	21.789	0	31.618	0	41.448	0	51.278	1	1.107	1	10.937	13	0.035
14	0	2.294	0	12.123	0	21.953	0	31.782	0	41.612	0	51.441	1	1.271	1	11.100	14	0.038
15	0	2.457	0	12.287	0	22.117	0	31.946	0	41.776	0	51.605	1	1.435	1	11.264	15	0.041
16	0	2.621	0	12.451	0	22.280	0	32.110	0	41.939	0	51.769	1	1.599	1	11.428	16	0.044
17	0	2.785	0	12.615	0	22.444	0	32.274	0	42.103	0	51.933	1	1.762	1	11.592	17	0.046
18	0	2.949	0	12.778	0	22.608	0	32.438	0	42.267	0	52.097	1	1.926	1	11.756	18	0.049
19	0	3.113	0	12.942	0	22.772	0	32.601	0	42.431	0	52.260	1	2.090	1	11.920	19	0.052
20	0	3.277	0	13.106	0	22.936	0	32.765	0	42.595	0	52.424	1	2.254	1	12.083	20	0.055
21	0	3.440	0	13.270	0	23.099	0	32.929	0	42.759	0	52.588	1	2.418	1	12.247	21	0.057
22	0	3.604	0	13.434	0	23.263	0	33.093	0	42.922	0	52.752	1	2.582	1	12.411	22	0.060
23	0	3.768	0	13.598	0	23.427	0	33.257	0	43.086	0	52.916	1	2.745	1	12.575	23	0.063
24	0	3.932	0	13.761	0	23.591	0	33.420	0	43.250	0	53.080	1	2.909	1	12.739	24	0.066
25	0	4.096	0	13.925	0	23.755	0	33.584	0	43.414	0	53.243	1	3.073	1	12.903	25	0.068
26	0	4.259	0	14.089	0	23.919	0	33.748	0	43.578	0	53.407	1	3.237	1	13.066	26	0.071
27	0	4.423	0	14.253	0	24.082	0	33.912	0	43.742	0	53.571	1	3.401	1	13.230	27	0.074
28	0	4.587	0	14.417	0	24.246	0	34.076	0	43.905	0	53.735	1	3.564	1	13.394	28	0.076
29	0	4.751	0	14.581	0	24.410	0	34.240	0	44.069	0	53.899	1	3.728	1	13.558	29	0.079
30	0	4.915	0	14.744	0	24.574	0	34.403	0	44.233	0	54.063	1	3.892	1	13.722	30	0.082
31	0	5.079	0	14.908	0	24.738	0	34.567	0	44.397	0	54.226	1	4.056	1	13.886	31	0.085
32	0	5.242	0	15.072	0	24.902	0	34.731	0	44.561	0	54.390	1	4.220	1	14.049	32	0.087
33	0	5.406	0	15.236	0	25.065	0	34.895	0	44.724	0	54.554	1	4.384	1	14.213	33	0.090
34	0	5.570	0	15.400	0	25.229	0	35.059	0	44.888	0	54.718	1	4.547	1	14.377	34	0.093
35	0	5.734	0	15.563	0	25.393	0	35.223	0	45.052	0	54.882	1	4.711	1	14.541	35	0.096
36	0	5.898	0	15.727	0	25.557	0	35.386	0	45.216	0	55.046	1	4.875	1	14.705	36	0.098
37	0	6.062	0	15.891	0	25.721	0	35.550	0	45.380	0	55.209	1	5.039	1	14.868	37	0.101
38	0	6.225	0	16.055	0	25.885	0	35.714	0	45.544	0	55.373	1	5.203	1	15.032	38	0.104
39	0	6.389	0	16.219	0	26.048	0	35.878	0	45.707	0	55.537	1	5.367	1	15.196	39	0.106
40	0	6.553	0	16.383	0	26.212	0	36.042	0	45.871	0	55.701	1	5.530	1	15.360	40	0.109
41	0	6.717	0	16.546	0	26.376	0	36.206	0	46.035	0	55.865	1	5.694	1	15.524	41	0.112
42	0	6.881	0	16.710	0	26.540	0	36.369	0	46.199	0	56.028	1	5.858	1	15.688	42	0.115
43	0	7.045	0	16.874	0	26.704	0	36.533	0	46.363	0	56.192	1	6.022	1	15.851	43	0.117
44	0	7.208	0	17.038	0	26.867	0	36.697	0	46.527	0	56.356	1	6.186	1	16.015	44	0.120
45	0	7.372	0	17.202	0	27.031	0	36.861	0	46.690	0	56.520	1	6.350	1	16.179	45	0.123
46	0	7.536	0	17.366	0	27.195	0	37.025	0	46.854	0	56.684	1	6.513	1	16.343	46	0.126
47	0	7.700	0	17.529	0	27.359	0	37.188	0	47.018	0	56.848	1	6.677	1	16.507	47	0.128
48	0	7.864	0	17.693	0	27.523	0	37.352	0	47.182	0	57.011	1	6.841	1	16.671	48	0.131
49	0	8.027	0	17.857	0	27.687	0	37.516	0	47.346	0	57.175	1	7.005	1	16.834	49	0.134
50	0	8.191	0	18.021	0	27.850	0	37.680	0	47.510	0	57.339	1	7.169	1	16.998	50	0.137
51	0	8.355	0	18.185	0	28.014	0	37.844	0	47.673	0	57.503	1	7.332	1	17.162	51	0.139
52	0	8.519	0	18.349	0	28.178	0	38.008	0	47.837	0	57.667	1	7.496	1	17.326	52	0.142
53	0	8.683	0	18.512	0	28.342	0	38.171	0	48.001	0	57.831	1	7.660	1	17.490	53	0.145
54	0	8.847	0	18.676	0	28.506	0	38.335	0	48.165	0	57.994	1	7.824	1	17.654	54	0.147
55	0	9.010	0	18.840	0	28.670	0	38.499	0	48.329	0	58.158	1	7.988	1	17.817	55	0.150
56	0	9.174	0	19.004	0	28.833	0	38.663	0	48.492	0	58.322	1	8.152	1	17.981	56	0.153
57	0	9.338	0	19.168	0	28.997	0	38.827	0	48.656	0	58.486	1	8.315	1	18.145	57	0.156
58	0	9.502	0	19.331	0	29.161	0	38.991	0	48.820	0	58.650	1	8.479	1	18.309	58	0.158
59	0	9.666	0	19.495	0	29.325	0	39.154	0	48.984	0	58.814	1	8.643	1	18.473	59	0.161
Sidereal.	$0^{h.}$		$1^{h.}$		$2^{h.}$		$3^{h.}$		$4^{h.}$		$5^{h.}$		$6^{h.}$		$7^{h.}$		For Seconds.	

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 7.784	2 17.614	2 27.443	0	0.000
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 7.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 8.112	2 17.941	2 27.771	2	0.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 8.276	2 18.105	2 27.935	3	0.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 8.440	2 18.269	2 28.099	4	0.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 8.603	2 18.433	2 28.263	5	0.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 8.767	2 18.597	2 28.426	6	0.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 8.931	2 18.761	2 28.590	7	0.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 9.095	2 18.924	2 28.754	8	0.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 9.259	2 19.088	2 28.918	9	0.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 9.423	2 19.252	2 29.082	10	0.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 9.586	2 19.416	2 29.245	11	0.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 9.750	2 19.580	2 29.409	12	0.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13	0.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14	0.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15	0.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16	0.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 0.740	2 10.569	2 [illegible].399	2 30.228	17	0.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18	0.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19	0.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20	0.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21	0.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22	0.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23	0.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 1.887	2 11.716	2 21.546	2 31.375	24	0.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25	0.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26	0.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27	0.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28	0.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29	0.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30	0.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31	0.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32	0.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33	0.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34	0.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35	0.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36	0.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37	0.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38	0.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39	0.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40	0.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41	0.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42	0.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 4.999	2 14.829	2 24.658	2 34.488	43	0.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44	0.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45	0.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46	0.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 5.655	2 15.484	2 25.314	2 35.143	47	0.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 5.818	2 15.648	2 25.477	2 35.307	48	0.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49	0.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50	0.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51	0.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52	0.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53	0.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54	0.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55	0.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 7.129	2 16.959	2 26.788	2 36.618	56	0.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57	0.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58	0.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59	0.161
Sidereal.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side-real.	$16^{\text{h.}}$	$17^{\text{h.}}$	$18^{\text{h.}}$	$19^{\text{h.}}$	$20^{\text{h.}}$	$21^{\text{h.}}$	$22^{\text{h.}}$	$23^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	0	0.000
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2	0.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3	0.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4	0.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5	0.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6	0.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7	0.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8	0.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9	0.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10	0.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11	0.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12	0.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13	0.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14	0.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15	0.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16	0.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17	0.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18	0.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19	0.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	0.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	0.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	0.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	0.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	0.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	0.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	0.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	0.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	0.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	0.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	0.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	0.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	0.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	0.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	0.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	0.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	0.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	0.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	0.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	0.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	0.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	0.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	0.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	0.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	0.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	0.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	0.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	0.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	0.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	0.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	0.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	0.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	0.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	0.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	0.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	0.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	0.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	0.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	0.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	0.161
Side-real.	$16^{\text{h.}}$	$17^{\text{h.}}$	$18^{\text{h.}}$	$19^{\text{h.}}$	$20^{\text{h.}}$	$21^{\text{h.}}$	$22^{\text{h.}}$	$23^{\text{h.}}$	For Seconds.	

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$0^{\mathrm{h.}}$	$1^{\mathrm{h.}}$	$2^{\mathrm{h.}}$	$3^{\mathrm{h.}}$	$4^{\mathrm{h.}}$	$5^{\mathrm{h.}}$	$6^{\mathrm{h.}}$	$7^{\mathrm{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995	0	0.000
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1	0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2	0.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3	0.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4	0.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5	0.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6	0.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7	0.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8	0.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9	0.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10	0.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11	0.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12	0.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13	0.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	14	0.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15	0.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16	0.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	17	0.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18	0.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19	0.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20	0.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21	0.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22	0.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23	0.063
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24	0.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25	0.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26	0.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27	0.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28	0.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29	0.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30	0.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31	0.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32	0.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33	0.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34	0.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35	0.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36	0.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37	0.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38	0.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39	0.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40	0.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41	0.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42	0.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43	0.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44	0.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45	0.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46	0.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47	0.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48	0.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49	0.134
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	50	0.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51	0.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52	0.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53	0.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54	0.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55	0.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56	0.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57	0.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58	0.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59	0.162
Mean Solar.	$0^{\mathrm{h.}}$	$1^{\mathrm{h.}}$	$2^{\mathrm{h.}}$	$3^{\mathrm{h.}}$	$4^{\mathrm{h.}}$	$5^{\mathrm{h.}}$	$6^{\mathrm{h.}}$	$7^{\mathrm{h.}}$	For Seconds.	

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 8.134	2 17.991	2 27.847	0	0.000
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 8.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 8.463	2 18.319	2 28.176	2	0.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 8.627	2 18.483	2 28.340	3	0.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 8.791	2 18.648	2 28.504	4	0.011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 8.956	2 18.812	2 28.668	5	0.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 9.120	2 18.976	2 28.833	6	0.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 9.284	2 19.141	2 28.997	7	0.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 9.448	2 19.305	2 29.161	8	0.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 9.613	2 19.469	2 29.326	9	0.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 9.777	2 19.633	2 29.490	10	0.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 0.085	2 9.941	2 19.798	2 29.654	11	0.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 0.249	2 10.105	2 19.962	2 29.818	12	0.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 0.413	2 10.270	2 20.126	2 29.983	13	0.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 0.578	2 10.434	2 20.290	2 30.147	14	0.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 0.742	2 10.598	2 20.455	2 30.311	15	0.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 0.906	2 10.763	2 20.619	2 30.476	16	0.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 1.070	2 10.927	2 20.783	2 30.640	17	0.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 1.235	2 11.091	2 20.948	2 30.804	18	0.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 1.399	2 11.255	2 21.112	2 30.968	19	0.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 1.563	2 11.420	2 21.276	2 31.133	20	0.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 1.727	2 11.584	2 21.440	2 31.297	21	0.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 1.892	2 11.748	2 21.605	2 31.461	22	0.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 2.056	2 11.912	2 21.769	2 31.625	23	0.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 2.220	2 12.077	2 21.933	2 31.790	24	0.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 2.385	2 12.241	2 22.098	2 31.954	25	0.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 2.549	2 12.405	2 22.262	2 32.118	26	0.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 2.713	2 12.570	2 22.426	2 32.283	27	0.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 2.877	2 12.734	2 22.590	2 32.447	28	0.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 3.042	2 12.898	2 22.755	2 32.611	29	0.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 3.206	2 13.062	2 22.919	2 32.775	30	0.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 3.370	2 13.227	2 23.083	2 32.940	31	0.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 3.534	2 13.391	2 23.247	2 33.104	32	0.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 3.699	2 13.555	2 23.412	2 33.268	33	0.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 3.863	2 13.720	2 23.576	2 33.432	34	0.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 4.027	2 13.884	2 23.740	2 33.597	35	0.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 4.192	2 14.048	2 23.905	2 33.761	36	0.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 4.356	2 14.212	2 24.069	2 33.925	37	0.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 4.520	2 14.377	2 24.233	2 34.090	38	0.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 4.684	2 14.541	2 24.397	2 34.254	39	0.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 4.849	2 14.705	2 24.562	2 34.418	40	0.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 5.013	2 14.869	2 24.726	2 34.582	41	0.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 5.177	2 15.034	2 24.890	2 34.747	42	0.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 5.342	2 15.198	2 25.054	2 34.911	43	0.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 5.506	2 15.362	2 25.219	2 35.075	44	0.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 5.670	2 15.527	2 25.383	2 35.239	45	0.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 5.834	2 15.691	2 25.547	2 35.404	46	0.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 5.999	2 15.855	2 25.712	2 35.568	47	0.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 6.163	2 16.019	2 25.876	2 35.732	48	0.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 6.327	2 16.184	2 26.040	2 35.897	49	0.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 6.491	2 16.348	2 26.204	2 36.061	50	0.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 6.656	2 16.512	2 26.369	2 36.225	51	0.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 6.820	2 16.676	2 26.533	2 36.389	52	0.142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 6.984	2 16.841	2 26.697	2 36.554	53	0.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 7.149	2 17.005	2 26.861	2 36.718	54	0.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 7.313	2 17.169	2 27.026	2 36.882	55	0.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 7.477	2 17.334	2 27.190	2 37.047	56	0.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 7.641	2 17.498	2 27.354	2 37.211	57	0.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 7.806	2 17.662	2 27.519	2 37.375	58	0.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 7.970	2 17.826	2 27.683	2 37.539	59	0.162
Mean Solar.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699	0	0.000
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2	0.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3	0.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4	0.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5	0.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6	0.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7	0.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8	0.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9	0.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10	0.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11	0.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12	0.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13	0.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14	0.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15	0.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16	0.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	0.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	0.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	0.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	0.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	0.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	0.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	0.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	0.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	0.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	26	0.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	0.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	0.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	0.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	0.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	0.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	0.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	0.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	0.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	0.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	0.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	0.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	0.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	0.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	0.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	0.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	0.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	0.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	0.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	0.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	0.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	0.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	0.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	0.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	0.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	0.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	0.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	0.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	0.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	0.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	0.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	0.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	0.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	0.162
Mean Solar.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	

TABLE FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS.

Reduce the observed altitude of Polaris to the true altitude.

Reduce the recorded time of observation to the local sidereal time.

If the sidereal time is
- less than $1^h\ 21^m.1$, subtract it from $1^h\ 21^m.1$;
- between $1^h\ 21^m.1$ and $13^h\ 21^m.1$, subtract $1^h\ 21^m.1$ from it;
- greater than $13^h\ 21^m.1$, subtract it from $25^h\ 21^m.1$;

and the remainder is the hour-angle of Polaris.

With this hour-angle take out the correction from Table IV (below), and add it to or subtract it from the true altitude, according to its sign. The result is the approximate latitude of the place.

Example.—1896, July 10, at $9^h\ 29^m\ 29^s$, P. M., mean solar time, in longitude 29° east of Greenwich, suppose the true altitude of Polaris to be 29° 29′: required the latitude of the place.

	h	m	s
Local astronomical mean time	9	29	29
Reduction from Table III, for $9^h\ 29^m\ 29^s$	+	1	33.5
Greenwich sidereal time of mean noon, July 10, page 111 . .	7	15	37.7
Reduction from Table III, for longitude (= $1^h\ 56^m$ east, or minus)	—	0	19.1
Sum (having regard to signs) is equal to local sidereal time .	16	46	21.1

	h	m	s
	25	21	6
Subtract sidereal time	16	46	21.1
Remainder is equal to hour-angle of Polaris . . .	8	34	44.9

		°	′
True altitude . . .	+	29	29.0
Correction from Table IV (below)	+	0	47.1
Approximate Latitude . -	+	30	16.1

TABLE IV—1896.

Hour-Angle.	0^h		1^h		2^h		3^h		4^h		5^h	
m	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′
0	− 1 14.6	0.0	− 1 12.0	0.5	− 1 4.4	0.8	− 0 52.3	1.1	− 0 36.7	1.4	− 0 18.5	1.5
5	1 14.6	0.1	1 11.5	0.4	1 3.6	0.9	0 51.2	1.2	0 35.3	1.5	0 17.0	1.6
10	1 14.5	0.1	1 11.1	0.5	1 2.7	0.9	0 50.0	1.2	0 33.8	1.5	0 15.4	1.6
15	1 14.4	0.1	1 10.6	0.6	1 1.8	1.0	0 48.8	1.3	0 32.3	1.4	0 13.8	1.6
20	− 1 14.3	0.2	− 1 10.0	0.6	− 1 0.8	0.9	− 0 47.5	1.3	− 0 30.9	1.5	− 0 12.2	1.6
25	1 14.1	0.2	1 9.4	0.6	0 59.9	1.0	0 46.2	1.3	0 29.4	1.5	0 10.6	1.7
30	1 13.9	0.2	1 8.8	0.6	0 58.9	1.0	0 44.9	1.3	0 27.9	1.6	0 8.9	1.6
35	1 13.7	0.3	1 8.2	0.7	0 57.9	1.1	0 43.6	1.4	0 26.3	1.5	0 7.3	1.6
40	− 1 13.4	0.3	− 1 7.5	0.8	− 0 56.8	1.1	− 0 42.2	1.3	− 0 24.8	1.5	− 0 5.7	1.6
45	1 13.1	0.3	1 6.7	0.7	0 55.7	1.1	0 40.9	1.4	0 23.3	1.6	0 4.1	1.7
50	1 12.8	0.4	1 6.0	0.8	0 54.6	1.1	0 39.5	1.4	0 21.7	1.6	0 2.4	1.6
55	1 12.4	0.4	1 5.2	0.8	0 53.5	1.2	0 38.1	1.4	0 20.1	1.6	− 0 0.8	1.6
60	− 1 12.0		− 1 4.4		− 0 52.3		− 0 36.7		− 0 18.5		+ 0 0.8	

Hour-Angle.	6^h		7^h		8^h		9^h		10^h		11^h	
m	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′
0	+ 0 0.8	1.6	+ 0 20.1	1.5	+ 0 37.9	1.4	+ 0 53.1	1.2	+ 1 4.8	0.8	+ 1 12.1	0.4
5	0 2.4	1.7	0 21.6	1.6	0 39.3	1.4	0 54.3	1.1	1 5.6	0.7	1 12.5	0.4
10	0 4.1	1.6	0 23.2	1.5	0 40.7	1.3	0 55.4	1.0	1 6.3	0.8	1 12.9	0.3
15	0 5.7	1.6	0 24.7	1.5	0 42.0	1.3	0 56.4	1.1	1 7.1	0.7	1 13.2	0.3
20	+ 0 7.3	1.6	+ 0 26.2	1.5	+ 0 43.3	1.3	+ 0 57.5	1.0	+ 1 7.8	0.6	+ 1 13.5	0.3
25	0 8.9	1.6	0 27.7	1.5	0 44.6	1.3	0 58.5	1.0	1 8.4	0.6	1 13.8	0.2
30	0 10.5	1.6	0 29.2	1.5	0 45.9	1.3	0 59.5	0.9	1 9.0	0.6	1 14.0	0.2
35	0 12.1	1.6	0 30.7	1.5	0 47.2	1.2	1 0.4	1.0	1 9.6	0.6	1 14.2	0.1
40	+ 0 13.7	1.6	+ 0 32.2	1.4	+ 0 48.4	1.2	+ 1 1.4	0.9	+ 1 10.2	0.5	+ 1 14.3	0.1
45	0 15.3	1.6	0 33.6	1.5	0 49.6	1.2	1 2.3	0.8	1 10.7	0.5	1 14.4	0.1
50	0 16.9	1.6	0 35.1	1.4	0 50.8	1.2	1 3.1	0.9	1 11.2	0.5	1 14.5	0.1
55	0 18.5	1.6	0 36.5	1.4	0 52.0	1.1	1 4.0	0.8	1 11.7	0.4	1 14.6	0.0
60	+ 0 20.1		+ 0 37.9		+ 0 53.1		+ 1 4.8		+ 1 12.1		+ 1 14.6	